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JANUARY 1980 NUMBER 425 -- Part 1

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Solar-Geophysical Data prompt reports

DEPARTMENT OF COMMERCE
UNITED STATES OF AMERICA

Explanation of Data Reports Issued as Number 414 (Supplement) February 1979
Data for December 1979 -- November 1979

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Solar - Geophysical Data

NO. 425 JANUARY 1980

Part I (Prompt Reports)

DATA FOR
DECEMBER 1979
NOVEMBER 1979

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR-GEOPHYSICAL DATA

No. 425

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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Sudden Commencements and Solar Flare Effects

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DETAILED COVERAGE FOR 1979 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1979 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	---	---	---	---	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	
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A.13ab	Solar Wind (Pioneers 8 & 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---
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A.18	Interplanetary Electric Field (Pioneer 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---
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C.1d	Flare Patrol Observations	414A 23	415A 24	416A 24	417A 20	418A 23	419A 24	420A 23	421A 25	423B 72	423A 26	424A 24	425A 24
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C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	415A147											
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D.1d	Principal Magnetic Storms	415A158	416A163	417A163	418A163	419A165	420A165	421A164	422A175	423A171	424A152	425A149	
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D.1f	Sudden Commencement and Solar Flare Effects	415A160	416A164	418B 76	419B 63	419A166	421B 42	422B 90	422A177	423A172	425B 33	425A150	
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F.1b	Cosmic Ray Neutron Counts (Climax)	416B 88	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	425A143	
F.1e	Cosmic Ray Neutron Counts (Alert)	415A154	416A151	417A151	418A151	420B 78	420A155	421A158	422A165	423A161	425B 32	425A143	
F.1f	Cosmic Ray Neutron Counts (Calgary)												
F.1h	Cosmic Ray Neutron Counts (Thule)	419B 62	419B 62	419B 62	419B 62	419A153	420A155	421A158	422A165	423A161	424A146	425A143	
F.1i	Cosmic Ray Neutron Counts (Kiel)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161		425A143	
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Notes:

"415A 52" listed under 1979 Jan means that the sunspot drawings for January 1979 were contained in *Solar-Geophysical Data* Number 415 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 425 Part I (Prompt)

DECEMBER 1979 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

DECEMBER 1979

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS).

03 DECEMBER 1979 BOULDER 03/1642Z SOFLARE M1/1B S22E52 03/1523Z DURATION 43 MINUTES.
19 DECEMBER 1979 BOULDER 19/2240Z SOFLARE X1/2B S16E33 19/2202Z IN PROGRESS AT 2240Z.
TENFLARE 600 FLUX UNITS 19/2205Z DURATION 25 MINUTES.
20 DECEMBER 1979 BOULDER 20/1420Z SOFLARE X1/1B S20E32 20/0610Z DURATION 17 MINUTES.
TENFLARE 190 FLUX UNITS 20/0612Z DURATION 10 MINUTES.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
335	01	30	159	157	015	S17W82	0	0	0	SUDDEN STORM COMMENCEMENT 30/0739Z THEN UNSETTLED TO 1600Z.	01	S17W82	Q	SOLQUIET MAGQUIET
						N17W84	0	0	0			N17W84	Q	
						N21W21	0	0	0			N21W21	Q	
						S12E04	0	0	0			S12E04	Q	
						S16E20	1	0	0			S16E20	Q	
						N12W10	0	0	0			N12W10	Q	
						S20E35	1	0	0			S20E35	E	
						N11E06	0	0	0			N11E06	Q	
						S25E55	0	0	0			S25E55	Q	
						S10W25	0	0	0			S10W25	Q	
						N19E56	1	0	0			N19E56	Q	
						S15E70	2	0	0			S15E70	E	
						N27E19	0	0	0			N27E19	Q	
336	02	01	150	167	014	N21W35	0	0	0		02	N21W35	Q	SOLQUIET MAGQUIET
						S12W09	0	0	0			S12W09	Q	
						S16E06	0	0	0			S16E06	Q	
						N10W23	0	0	0			N10W23	Q	
						S21E22	0	0	0			S21E22	Q	
						N12W05	1	0	0			N12W05	Q	
						S25E43	0	0	0			S25E43	Q	
						S10W39	0	0	0			S10W39	Q	
						S15E58	4	0	0			S15E58	E	
						S24E74	1	0	0			S24E74	Q	
						N29E05	0	0	0			N29E05	Q	
337	03	02	155	180	012	N21W47	0	0	0		03	N21W47	Q	SOLALERT 03/XX MAGQUIET
						S12W23	0	0	0			S12W23	Q	
						S16W07	0	0	0			S16W07	Q	
						S19E08	1	0	0			S19E08	E	
						N12W19	0	0	0			N12W19	Q	
						S26E30	1	0	0			S26E30	Q	
						S14E43	0	0	0			S14E43	E	
						S24E63	2	0	0			S24E63	Q	
						S16E74	0	0	0			S16E74	E	
						N16E74	0	0	0			N16E74	Q	
338	04	03	254	197	008	N21W61	0	0	0	BOULDER SOFLARE 03/1630Z M1/2B 03/1523Z 43 MINUTE DURATION.	04	N21W61	Q	SOLALERT 04/XX MAGQUIET
						S12W35	0	0	0			S12W35	Q	
						S16W19	0	0	0			S16W19	Q	
						S22W03	1	0	0			S22W03	E	
						S25E18	1	0	0			S25E18	Q	
						S10W64	0	0	0			S10W64	Q	
						S15E31	2	0	0			S15E31	Q	
						N28W19	0	0	0			N28W19	Q	
						S24E50	1	1	0			S24E50	Q	
						S14E66	0	0	0			S14E66	E	
						N23E63	0	0	0			N23E63	Q	
						S18E09	1	0	0			S18E09	Q	
						S14W07	3	0	0			S14W07	Q	
						N21E28	1	0	0			N21E28	Q	
339	05	04	273	227	014	N20W72	0	0	0		05	N20W72	Q	SOLALERT MINOR 05 MAGQUIET
						S14W48	1	0	0			S14W48	Q	
						S17W32	0	0	0			S17W32	Q	
						S24W12	0	0	0			S24W12	Q	
						S24E04	2	1	0			S24E04	E	
						S15E17	1	0	0			S15E17	E	
						S25E42	2	0	0			S25E42	Q	
						S13E61	0	0	0			S13E61	E	
						N22E50	0	0	0			N22E50	Q	
						S19W20	4	0	0			S19W20	Q	
						S14W20	4	0	0			S14W20	Q	
						N20E15	0	0	0			N20E15	Q	
						S15E53	0	0	0			S15E53	Q	
						S16E27	0	0	0			S16E27	Q	
340	06	05	249	234	006	N20W89	0	0	0		06	N20W89	Q	SOLALERT 06/08 MAGQUIET
						S13W62	0	0	0			S13W62	Q	
						S17W46	0	0	0			S17W46	Q	
						S21W27	0	0	0			S21W27	Q	
						S25W09	5	0	0			S25W09	A	
						S15E03	5	0	0			S15E03	E	
						S25E26	0	0	0			S25E26	Q	
						S13E48	2	0	0			S13E48	Q	
						N22E35	0	0	0			N22E35	Q	
						S17W35	1	0	0			S17W35	E	
						S14W35	0	0	0			S14W35	E	
						S15E38	0	0	0			S15E38	Q	
						S17E11	0	0	0			S17E11	Q	
						N20W09	0	0	0			N20W09	Q	

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341	07	06	290	230	005	S13W75	0	0	0		07	S13W75	Q	SOLNIL MAGQUIET
						S17W59	0	0	0			S17W59	Q	
						S22W41	0	0	0			S22W41	Q	
						S21W21	1	0	0			S21W21	E	
						S15W10	2	0	0			S15W10	E	
						S25E12	0	0	0			S25E12	Q	
						S13E34	1	0	0			S13E34	Q	
						N22E22	0	0	0			N22E22	Q	
						S18W48	0	0	0			S18W48	Q	
						S13W48	3	0	0			S13W48	E	
						S15E26	0	0	0			S15E26	Q	
						S17W02	0	0	0			S17W02	Q	
						N19W22	0	0	0			N19W22	Q	
						N14W64	1	0	0			N14W64	Q	
						S18W16	0	0	0			S18W16	Q	
						N10E38	0	0	0			N10E38	Q	
						N22E47	0	0	0			N22E47	Q	
342	08	07	288	230	003	S17W72	0	0	0		08	S17W72	Q	SOLQUIET MAGQUIET
						S22W52	0	0	0			S22W52	Q	
						S27W35	5	0	0			S27W35	E	
						S16W21	1	0	0			S16W21	Q	
						S25W02	0	0	0			S25W02	Q	
						S12E19	1	0	0			S12E19	Q	
						N22E10	0	0	0			N22E10	Q	
						S20W60	2	0	0			S20W60	E	
						S14W62	2	0	0			S14W62	Q	
						S15E13	0	0	0			S15E13	Q	
						S17W12	0	0	0			S17W12	Q	
						N14W75	0	0	0			N14W75	Q	
						S17W29	0	0	0			S17W29	Q	
						N09E24	1	0	0			N09E24	Q	
						N22E35	0	0	0			N22E35	Q	
						N13W10	0	0	0			N13W10	Q	
						N14E68	0	0	0			N14E68	Q	
						N19E70	1	0	0			N19E70	Q	
						N17E08	0	0	0			N17E08	Q	
						S25E09	0	0	0			S25E09	Q	
343	09	08	349	247	010	S17W85	0	0	0		09	S17W85	Q	SOLQUIET MAGQUIET
						S22W67	1	0	0			S22W67	Q	
						S23W48	1	0	0			S23W48	E	
						S16W31	2	0	0			S16W31	E	
						S25W15	0	0	0			S25W15	Q	
						S12E06	3	0	0			S12E06	E	
						N22W02	0	0	0			N22W02	Q	
						S18W74	0	0	0			S18W74	E	
						S14W75	1	0	0			S14W75	Q	
						S16E03	0	0	0			S16E03	Q	
						N09E11	3	0	0			N09E11	E	
						N21E26	1	0	0			N21E26	Q	
						N14W23	0	0	0			N14W23	Q	
						N13E55	2	0	0			N13E55	Q	
						N23E56	1	0	0			N23E56	E	
						N15W00	0	0	0			N15W00	Q	
						N25E16	0	0	0			N25E16	Q	
						S35E23	0	0	0			S35E23	Q	
						S14E25	0	0	0			S14E25	Q	
						N12E39	0	0	0			N12E39	Q	
						S16E43	1	0	0			S16E43	Q	
						S11E70	0	0	0			S11E70	Q	
						N32E71	0	0	0			N32E71	Q	
344	10	09	293	240	009	S20W90	1	0	0		10	S20W90	Q	SOLQUIET MAGALERT 10/XX
						S24W65	0	0	0			S24W65	Q	
						S15W48	2	0	0			S15W48	E	
						S13W09	0	0	0			S13W09	A	
						N22W16	0	0	0			N22W16	Q	
						S16W13	0	0	0			S16W13	Q	
						N11W06	0	0	0			N11W06	Q	
						N21E11	0	0	0			N21E11	Q	
						N14W38	0	0	0			N14W38	Q	
						N12E41	0	0	0			N12E41	Q	
						N18E42	1	0	0			N18E42	E	
						N22E02	0	0	0			N22E02	Q	
						S34E07	0	0	0			S34E07	Q	
						N11E24	0	0	0			N11E24	Q	
						S15E28	5	0	0			S15E28	Q	
						S12E55	0	0	0			S12E55	Q	
						S33E58	0	0	0			S33E58	Q	
						N22E57	2	0	0			N22E57	Q	
						S28W12	0	0	0			S28W12	Q	
						N11E12	0	0	0			N11E12	Q	

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345	11	10	294	237	005	S24W82	1	0	0		11	S24W82	Q	SOLQUIET MAGNIL
						S15W60	0	0	0			S15W60	Q	
						S13W22	0	0	0			S13W22	E	
						N22W29	0	0	0			N22W29	Q	
						S15W27	0	0	0			S15W27	Q	
						N10W19	0	0	0			N10W19	Q	
						N21W05	0	0	0			N21W05	Q	
						N14W52	0	0	0			N14W52	Q	
						N13E28	0	0	0			N13E28	Q	
						N20E31	0	0	0			N20E31	Q	
						S34W05	2	0	0			S34W05	Q	
						N12E11	0	0	0			N12E11	Q	
						S15E14	2	0	0			S15E14	Q	
						S32E43	0	0	0			S32E43	Q	
						N25E42	2	0	0			N25E42	Q	
						N12W00	0	0	0			N12W00	Q	
						S06W23	0	0	0			S06W23	Q	
						S26E28	0	0	0			S26E28	Q	
						S18E74	0	0	0			S18E74	Q	
346	12	11	336	241	006	S16W75	0	0	0		12	S16W75	Q	SOLQUIET MAGQUIET
						S12W36	0	0	0			S12W36	E	
						N22W41	0	0	0			N22W41	Q	
						S16W40	0	0	0			S16W40	Q	
						N09W31	0	0	0			N09W31	Q	
						N20W16	1	0	0			N20W16	Q	
						N13W64	1	0	0			N13W64	Q	
						N12E17	1	0	0			N12E17	Q	
						N20E20	2	0	0			N20E20	Q	
						S33W18	0	0	0			S33W18	Q	
						N11W02	1	0	0			N11W02	Q	
						S15W00	1	0	0			S15W00	E	
						S31E33	0	0	0			S31E33	Q	
						N25E30	5	0	0			N25E30	Q	
						N11W14	3	0	0			N11W14	Q	
						S05W37	0	0	0			S05W37	Q	
						S25E15	0	0	0			S25E15	Q	
						S18E68	2	0	0			S18E68	E	
						S07W14	0	0	0			S07W14	Q	
						N21W11	0	0	0			N21W11	Q	
347	13	12	271	240	005	S16W87	0	0	0		13	S16W87	Q	SOLQUIET MAGQUIET
						S11W51	0	0	0			S11W51	Q	
						S15W53	1	0	0			S15W53	Q	
						N09W44	0	0	0			N09W44	Q	
						N13W78	4	1	0			N13W78	E	
						N12E03	0	0	0			N12E03	Q	
						N20E05	0	0	0			N20E05	Q	
						S34W32	0	0	0			S34W32	Q	
						N11W18	0	0	0			N11W18	Q	
						S15W15	0	0	0			S15W15	Q	
						S31E20	0	0	0			S31E20	Q	
						N25E16	1	0	0			N25E16	Q	
						N12W29	4	0	0			N12W29	E	
						S26E01	1	0	0			S26E01	Q	
						S18E56	6	0	0			S18E56	E	
						S08W27	0	0	0			S08W27	Q	
						N18E19	1	0	0			N18E19	Q	
						N04E23	0	0	0			N04E23	Q	
						S13E66	1	0	0			S13E66	Q	
348	14	13	289	238	005	S27W82	1	0	0		14	S27W82	Q	SOLQUIET MAGQUIET
						S11W67	1	0	0			S11W67	Q	
						S15W66	1	0	0			S15W66	Q	
						N09W56	0	0	0			N09W56	Q	
						N13W10	0	0	0			N13W10	Q	
						N20W08	0	0	0			N20W08	Q	
						S34W43	1	1	0			S34W43	E	
						N10W70	1	0	0			N10W70	Q	
						S15W27	0	0	0			S15W27	E	
						N25E03	3	1	0			N25E03	E	
						N11W42	1	0	0			N11W42	Q	
						S26W12	0	0	0			S26W12	Q	
						S21E44	0	0	0			S21E44	Q	
						N16E06	1	0	0			N16E06	Q	
						N04E10	0	0	0			N04E10	Q	
						S13E49	0	0	0			S13E49	Q	
						S30W58	0	0	0			S30W58	Q	
						N09E30	0	0	0			N09E30	Q	
						S14W80	0	0	0			S14W80	Q	

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349	15	14	280	246	006	S12W80	1	0	0		15	S12W80	Q	SOLQUIET MAGQUIET
						S15W80	1	1	0			S15W80	Q	
						N09W69	2	1	0			N09W69	E	
						N13W24	0	0	0			N13W24	Q	
						N20W23	1	0	0			N20W23	Q	
						S34W56	0	0	0			S34W56	Q	
						N11W43	0	0	0			N11W43	Q	
						S15W39	4	0	0			S15W39	A	
						N24W10	0	0	0			N24W10	Q	
						N12W56	1	0	0			N12W56	Q	
						S26W23	0	0	0			S26W23	Q	
						S20E30	1	0	0			S20E30	Q	
						N17W08	1	0	0			N17W08	E	
						N05W03	0	0	0			N05W03	Q	
						S13E36	0	0	0			S13E36	Q	
						S23W09	0	0	0			S23W09	Q	
						S09E52	0	0	0			S09E52	Q	
350	16	15	232	238	009	N12W36	0	0	0		16	N12W36	Q	SOLQUIET MAGQUIET
						N20W35	0	0	0			N20W35	Q	
						S33W72	0	0	0			S33W72	Q	
						S14W54	1	0	0			S14W54	E	
						N23W24	1	0	0			N23W24	Q	
						S20E17	3	0	0			S20E17	E	
						N16W22	0	0	0			N16W22	Q	
						N05W18	0	0	0			N05W18	Q	
						S12E22	0	0	0			S12E22	Q	
						S06E37	0	0	0			S06E37	Q	
						S25W23	0	0	0			S25W23	Q	
						N09W03	0	0	0			N09W03	Q	
351	17	16	225	224	009	N12W51	0	0	0		17	N12W51	Q	SOLQUIET MAGQUIET
						N18W50	1	0	0			N18W50	Q	
						S15W67	1	0	0			S15W67	E	
						N23W38	0	0	0			N23W38	Q	
						S20E04	1	0	0			S20E04	Q	
						N17W37	3	0	0			N17W37	E	
						N05W32	2	0	0			N05W32	E	
						S13E09	0	0	0			S13E09	Q	
						S07E24	0	0	0			S07E24	Q	
						S25W36	0	0	0			S25W36	Q	
						N09W16	0	0	0			N09W16	Q	
						S19W55	0	0	0			S19W55	Q	
						S17E73	0	0	0			S17E73	Q	
352	18	17	219	209	010	N12W64	0	0	0		18	N12W64	Q	SOLQUIET MAGQUIET
						N19W63	0	0	0			N19W63	Q	
						S17W82	3	0	0			S17W82	Q	
						N24W49	0	0	0			N24W49	Q	
						S19W09	0	0	0			S19W09	Q	
						N17W50	0	0	0			N17W50	E	
						N04W46	0	0	0			N04W46	Q	
						S12W07	0	0	0			S12W07	Q	
						S07E07	0	0	0			S07E07	Q	
						S24W50	0	0	0			S24W50	Q	
						N10W28	1	0	0			N10W28	Q	
						S18W69	1	0	0			S18W69	Q	
						S17E58	0	0	0			S17E58	Q	
353	19	18	194	195	006	N13W78	0	0	0		19	N13W78	Q	SOLALERT MINOR 19/21 MAGQUIET
						N19W77	0	0	0			N19W77	Q	
						N24W63	2	0	0			N24W63	Q	
						S19W22	0	0	0			S19W22	E	
						N17W62	2	0	0			N17W62	E	
						S12W21	0	0	0			S12W21	Q	
						S24W63	1	0	0			S24W63	Q	
						N10W42	10	1	0			N10W42	E	
						S18W81	1	0	0			S18W81	Q	
						S16E45	3	0	0			S16E45	E	
						S19E13	0	0	0			S19E13	Q	
						S30E15	0	0	0			S30E15	Q	
354	20	19	182	189	005	N19W91	0	0	0	PRESTO BOULDER	20	N19W91	Q	SOLALERT 20/22 MAGQUIET
						S19W36	1	0	0	19/2240Z. SOFLARE		S19W36	Q	
						N16W76	7	0	0	X1/2B S16E33		N16W76	E	
						S12W36	0	0	0	19/2202Z DURATION		S12W36	Q	
						S06W20	1	0	0	30 MINUTES. TEN-		S06W20	E	
						S24W81	1	0	0	FLARE 630 FLUX		S24W81	Q	
						N10W55	3	0	0	UNITS 19/2205Z DU-		N10W55	E	
						S16E31	2	1	1	RATION 25 MINUTES.		S16E31	A	
						S29W01	0	0	0			S29W01	Q	
355	21	20	172	193	005	S19W51	0	0	0	PRESTO BOULDER	21	S19W51	Q	SOLALERT 21/23 MAGQUIET
						N17W85	1	0	0	20/1435Z SOFLARE		N17W85	Q	
						S12W47	1	0	0	X1/1B S20E32		S12W47	Q	
						S06W34	7	0	0	20/0610Z DURATION		S06W34	E	
						S25W89	0	0	0	17 MINUTES. TEN-		S25W89	Q	
						N09W69	1	0	0	FLARE 190 FLUX		N09W69	Q	
						S15E18	11	1	1	UNITS 20/0612Z DU-		S15E18	A	
						S30W14	1	0	0	RATION 10 MINUTES.		S30W14	E	
						S12E71	1	1	0			S12E71	Q	

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						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
356	22	21	150	190	004	S19W65	0	0	0		22	S19W65	Q	SOLALERT 22/24
						S07W47	0	0	0			S07W47	Q	MAGALERT MINOR 22/23
						N09W82	0	0	0			N09W82	E	
						S16E06	6	0	0			S16E06	A	
						S31W29	0	0	0			S31W29	E	
						S12E55	2	0	0			S12E55	E	
						S16E65	1	0	0			S16E65	E	
						N21E66	0	0	0			N21E66	Q	
357	23	22	158	181	014	S18W81	0	0	0		23	S18W81	Q	SOLALERT 23/24 MAGNIL
						S07W61	2	0	0			S07W61	E	
						S16W08	2	0	0			S16W08	A	
						S31W42	1	0	0			S31W42	E	
						S13E39	1	0	0			S13E39	Q	
						S14E48	2	0	0			S14E48	E	
358	24	23	133	174	005	S07W75	5	2	0		24	S07W75	A	SOLALERT 24/26 MAGQUIET
						S31W55	0	0	0			S31W55	E	
						S21W55	0	0	0			S21W55	Q	
						S16W21	1	0	0			S16W21	A	
						S12E25	0	0	0			S12E25	E	
						S14E34	0	0	0			S14E34	E	
359	25	24	144	166	007	S07W86	1	0	0		25	S07W86	Q	SOLALERT 26/XX MAGQUIET
						S16W38	0	0	0			S16W38	A	
						S30W67	1	0	0			S30W67	Q	
						S12E10	0	0	0			S12E10	E	
						S14E20	3	0	0			S14E20	A	
						S21W69	2	0	0			S21W69	Q	
						N31W69	0	0	0			N31W69	Q	
						S15E75	0	0	0			S15E75	Q	
360	26	25	144	167	003	S16W48	1	1	0		26	S16W48	A	SOLALERT 26/XX MAGQUIET
						S30W84	0	0	0			S30W84	Q	
						S13W01	0	0	0			S13W01	E	
						S15E08	4	0	0			S15E08	A	
						N25E08	0	0	0			N25E08	Q	
						S19W83	0	0	0			S19W83	Q	
						N31W81	0	0	0			N31W81	Q	
						S15E60	0	0	0			S15E60	Q	
361	27	26	100	165	009	S17W61	7	0	0		27	S17W61	E	SOLNIL MAGQUIET
						S13W16	1	0	0			S13W16	Q	
						S15W05	2	0	0			S15W05	E	
						S23E49	2	0	0			S23E49	Q	
						S15E48	3	0	0			S15E48	Q	
362	28	27	151	162	010	S17W75	1	0	0		28	S17W75	A	SOLQUIET MAGQUIET
						S13W29	1	0	0			S13W29	E	
						S14W19	4	0	0			S14W19	E	
						S15E35	7	0	0			S15E35	A	
						S24E36	2	0	0			S24E36	E	
						N13E72	0	0	0			N13E72	Q	
						S14E79	0	0	0			S14E79	Q	
363	29	28	146	169	014	S18W83	1	1	0		29	S18W83	E	SOLALERT 30/31
						S15W36	1	0	0			S15W36	Q	MAGALERT MINOR 29/30
						S14E22	3	0	0			S14E22	E	
						S23E22	3	0	0			S23E22	Q	
						N13E58	0	0	0			N13E58	Q	
						S13E71	2	0	0			S13E71	A	
						S09W21	0	0	0			S09W21	Q	
						N13W27	0	0	0			N13W27	Q	
364	30	29	156	181	022	S16W46	1	0	0		30	S16W46	Q	SOLALERT 30/31
						N12W39	2	0	0			N12W39	E	MAGALERT MINOR 30/XX
						S14E07	6	0	0			S14E07	A	
						S23E09	0	0	0			S23E09	E	
						S21E37	0	0	0			S21E37	Q	
						N13E44	0	0	0			N13E44	Q	
						S13E57	7	1	0			S13E57	A	
						S22E76	0	0	0			S22E76	Q	
365	31	30	186	192	014	S16W61	2	0	0		31	S16W61	E	SOLALERT 31/XX MAGNIL
						N12W54	2	0	0			N12W54	Q	
						S15W06	1	0	0			S15W06	A	
						S23W05	0	0	0			S23W05	E	
						S20E22	3	0	0			S20E22	E	
						N12E31	0	0	0			N12E31	Q	
						S13E43	3	0	0			S13E43	A	
						S23E60	0	0	0			S23E60	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

DECEMBER 1979

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of obser-vation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No. of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
001	01	31	205	195	007	S14W78	2	0	0		01	S14W78	Q	SOLALERT 01/03 MAGQUIET
						S15W19	0	0	0			S15W19	E	
						S24W17	0	0	0			S24W17	Q	
						N12E18	0	0	0			N12E18	Q	
						S13E31	6	0	0			S13E31	A	
						N13W67	1	0	0			N13W67	Q	
						S21E10	1	0	0			S21E10	Q	
						S23E49	1	0	0			S23E49	Q	
						N12E70	4	0	0			N12E70	E	
						N18E79	0	0	0			N18E79	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

1979 PROVISIONAL

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	150	116	116	131	108	121	158	115	165	213	224	122
2	150	127	138	134	106	152	168	96	141	187	157	156
3	191	148	141	135	103	161	205	121	148	167	155	187
4	157	123	142	138	112	178	219	110	157	156	172	210
5	146	134	135	109	113	207	232	93	139	168	166	232
6	173	146	144	91	122	226	249	104	139	168	210	286
7	163	144	146	77	148	222	223	110	178	179	254	212
8	172	142	143	69	165	220	219	132	192	198	288	272
9	165	139	146	61	162	231	191	115	198	218	279	293
10	163	137	148	87	145	205	163	92	177	178	302	286
11	157	137	156	109	148	186	155	84	167	183	295	279
12	159	138	178	107	158	199	145	87	156	189	248	272
13	159	152	169	113	163	172	142	91	175	211	183	235
14	162	163	159	116	263	149	127	119	186	213	218	230
15	178	161	155	117	207	127	121	135	177	198	186	225
16	164	159	138	119	187	103	114	122	178	185	166	229
17	164	168	142	107	184	122	109	138	155	221	253	188
18	146	162	142	98	148	126	109	157	177	224	172	151
19	138	166	138	79	169	118	135	176	195	221	174	138
20	177	169	128	68	167	111	158	167	191	219	153	126
21	181	171	134	68	114	124	151	218	184	215	131	131
22	178	155	148	79	121	188	152	216	178	198	123	140
23	188	127	139	79	117	96	154	206	219	186	142	132
24	209	99	118	88	119	96	143	203	236	161	162	138
25	209	88	114	85	124	128	144	201	252	153	155	161
26	173	108	114	118	123	132	142	182	261	145	141	127
27	162	97	117	125	118	112	146	189	256	143	115	93
28	157	95	114	132	118	128	132	174	239	142	119	98
29	153		118	132	113	124	148	158	235	191	98	121
30	149		127	128	96	154	158	158	233	197	116	139
31	138		147		128		144	168		223		135
MEAN	165.8	138.8	137.8	102 8	134.6	158.5	159.6	143.5	188.7	188.2	185.8	182 2

1978 yearly mean = 92.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJU TED TO 1 A.U., S_a

1979

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	194.1*	185.8	168.5	202.6*	180 4	189.5	186.3	149.1	175.8	212.8	211.6	161 9
2	200.1	185.6	178.7	203.4	179.2	206.8*	200.9*	143.9*	180.1	211.5	209.5	172.8*
3	203.5*	187.4*	173.3	194.2	164.3	216.1*	213.4	145.1	186.8	204 7	207.5	195.1*
4	192.7*	187.7	181.4	183.5	176.8	228.8*	218.1	141.7	175 3*	197.7*	214.2	221 8
5	194.9	197.4	188.1*	179.3	169.6	230.2	204.5	141 6	177.1	192.8*	235.5	223.4*
6	190 9	206.5	182.4	176.3	171 1*	230.1	211.3	149.5	188.4*	195.5	273.2*	223.4
7	186.2	203.4	183.1*	166.7	178.8	230.1	207.2	151 1	186.3	197.0	286.9*	222.6
8	200.1	207.2*	178.9	169.8*	182.4*	242.7	206.7	152.7	183.6	200.3	310.1	226 9*
9	192.6	198.7	181.4	169.6	181.3	247.4*	197.9*	157.3	187.4	209.5	314.4*	232.4
10	186.2	198.4*	188.6	173.0	174.7	239.9	185.9	152 1*	184 6	208.7	367 8*	230 3
11	179.5	202.2*	181.7*	178.8*	178.6	229.6	178.6	154.4	181 5*	211.8	325.7*	230.6*
12	174.5	195.4	188.7	174.5	184.2	208.3	176.1	144.8	181 7	216.4	294.4	232.3
13	193 9	195 4	186.3	175.8	186.6	193.7	161.4	155.8	186.1	239.1	272 7	231.7
14	208.8*	204.2*	189.4	178.9	182 8	185.7	154.7*	158.2*	192.6*	236.4	256.4	238.3
15	192.1*	205.8*	181.3	168.1	181.9	176.8	151.1	167.6	193.8	230.7	239.7*	231.8
16	189.9*	209.2	183.5*	171.7	176.4	167.5	143 6	164.8	196.3*	232 3	230.6	216 3
17	175.7	213.1	177.7	168 8	167.7	156.1	142.7	165 8	202.7*	226.8	231.8	202.2
18	177.6	237.7	188.6*	158.7	171.3*	152.6	141.2	180.8	215.7	236.8	231.9	187.4
19	187.8	237 8	177.6	159.4	161 5	146.2	143.6	186.4	218 1*	237.3*	214.6	183.8
20	197.2	230.1*	184.1	156.1	155.6	151 5	146.6	204.2*	213.9*	236.7*	205.9	188.8*
21	218 3	225.1	182.2	161.5	155.7	148.9	143.7*	207.6*	218.4	230.1	189.8	176.7*
22	226.9	223.3	181 1	159.7*	156.5*	141 1	155.7	223.2	216.5	221.9	182.5	175.3
23	225.1	196.8	188.5	162.3	156.8	139.8	163.1*	218.6	224.2*	214.9*	183.2	168.6
24	208.5	182.8	188.3	161 9	159.2*	141.2	168.6	225.2	230.7	225 6*	175.2*	168.2
25	206 1	167.5	188.2	172 5	153.3*	147.8	164.5	229.3*	235.5	215.2	165.8*	162.8
26	192.9	166.8	208.2	182.8	149.1	153.7	165.6	223.3	229 9*	202.9	161.6	159.7
27	205.4	162.7	187.9	195.1*	149.4	158.5	159.1*	212.8	228.7*	211.2	155.7	153.6*
28	209 6	163.6	188.6	192.1*	149.2	159.1	158.1	214.2	233.8	210.8	158.1	163.1
29	209.3		191.4	185.7	158.2	166.9	156.7	197.6	225.8	214.8	154.8	174.8
30	194.1*		186.6	185.2*	158.4	176.7*	160 3	187.8	231.9	213.7*	152.2	185.5
31	193 7		201.4*		174.9		152.4	179.9		214.9*		188.9
MEAN	196.5	199.1	184.8	175.8	168.9	186.8	171.4	177.8	202.3	216 4	226.8	197.2

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

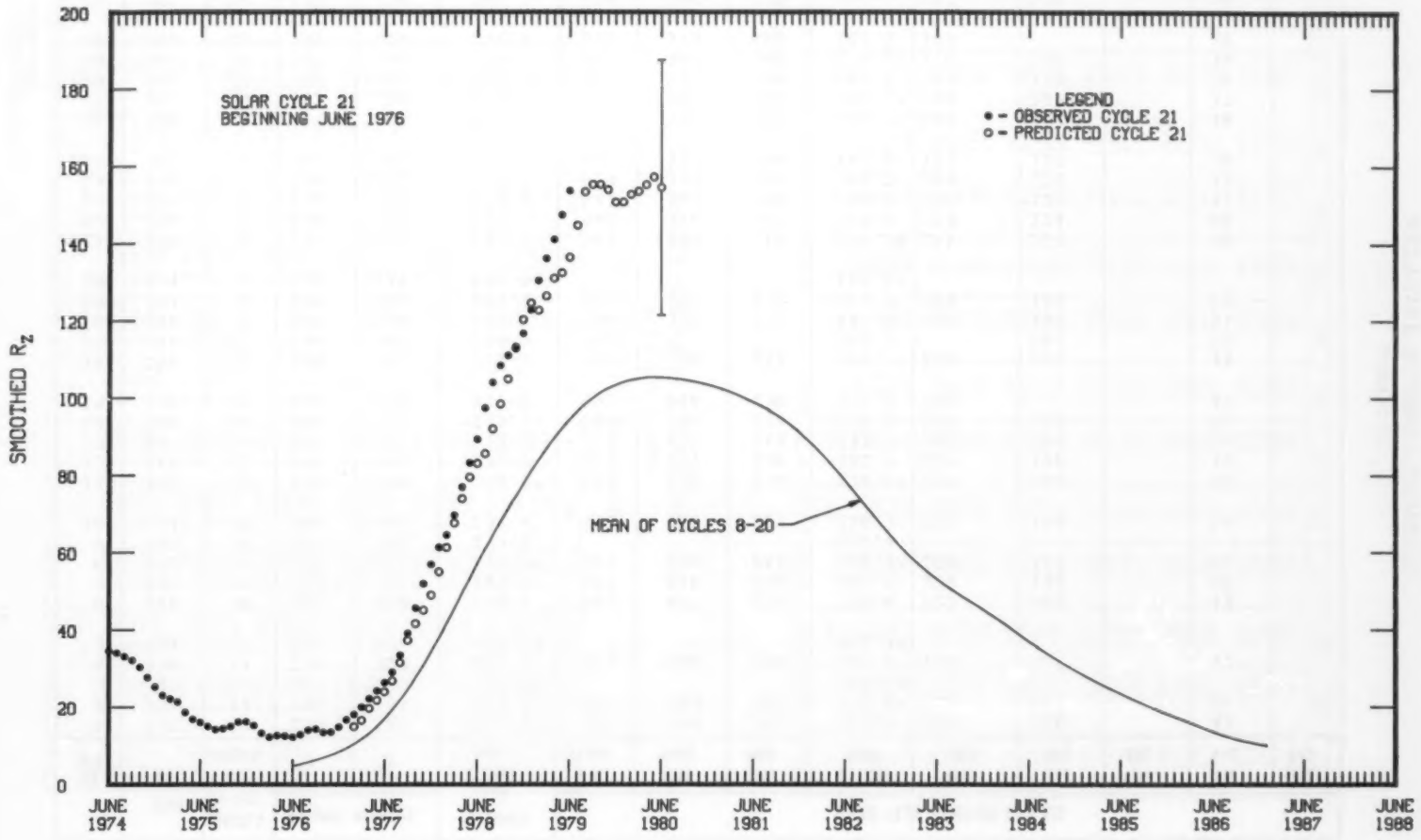
DECEMBER 1979

DEC 1979	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	335	11	122	106	166.6	557	380	191	161.9	170	116		42	
2	336	12	156	155	177.0*	567	393	197	172 0*	182	122		41	
3	337	13	187	193	200 9*				195.1*					
4	338	14	218	220	227 6	573	426	245	221 0	230	137		47	
5	339	15	232	194	230.1*				223.4*					
6	340	16	206	190	230.1	562	407	231	223.4	223	143		42	
7	341	17	212	171	229.5	577	416	228	222.6	224	148		46	
8	342	18	272	241	236.0*	582	430	245	228.9*	250	157		46	
9	343	19	293	222	239.6				232.4					
10	344	20	286	242	237.4	577	427	223	230.3	235	165		54	
11	345	21	279	223	238.0*	582	420	234	230.6*	237	166		48	
12	346	22	272	235	239.7	575	437	230	232.3	229	190		48	
13	347	23	235	237	239.1	532	421	240	231.7	247	196		48	
14	348	24	230	215	245.9	588	436	238	238 3	248	194		51	
15	349	25	225	170	239.2	583	430	239	231.8	248			45	
16	350	26	220	163	223 5	579	428	240	216.3	229	165		44	
17	351	27	180	152	208 9	581			202.2		161		52	
18	352	1	151	130	193.6	580	399	215	187.4	197	150		61	
19	353	2	138	142	189.1	568	413	215	183.0	189	148		60	
20	354	3	126	115	186 8*				180.8*					
21	355	4	131	111	182.5*	583	402	215	176.7*	191	137		48	
22	356	5	140	115	181.1	540	376	197	175.3	173	124		40	
23	357	6	132	97	174.4	541	363	195	168.6	169	121		41	
24	358	7	130	112	165.7	539	354	189	160.2	164	115		41	
25	359	8	161	93	167.5	512	323	180	162.0	153	123		39	
26	360	9	127	85	165.2	539	353	184	159.7	159	115		40	
27	361	10	93	94	158.8*	543	367	182	153.6*	160	121		37	
28	362	11	98	102	168.7	561	371	189	163 1	162	116		38	
29	363	12	121	103	179.9	571	394	200	174.0	179	128		38	
30	364	13	139	128	191.8	575	373	199	185.5	189			39	
31	365	14	135	130	195 3	578	406	214	188.9	197	139		38	
MEAN			182.2	157.6	203 5	565	398	213	197.2	201	144		44	

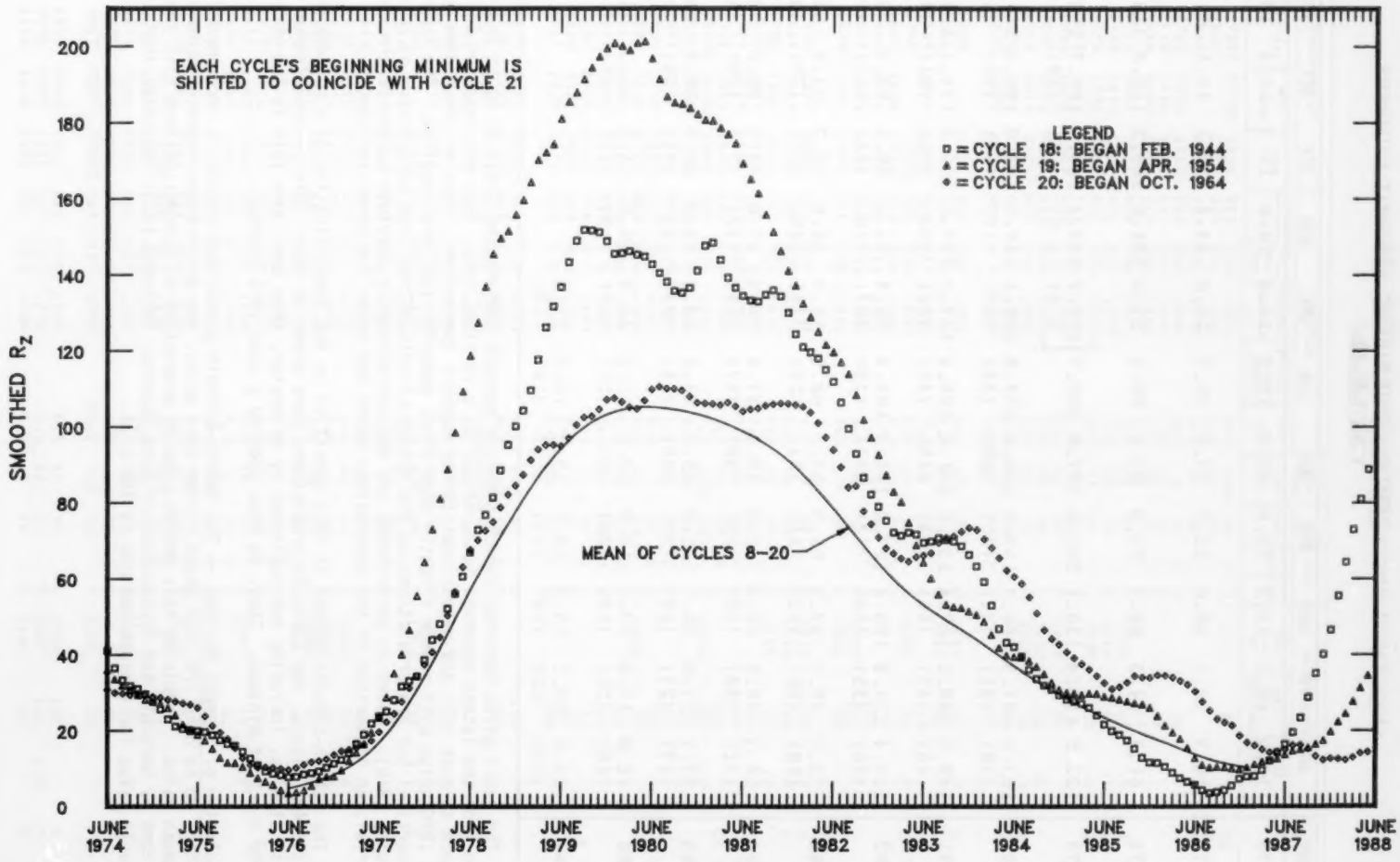
* Adjusted for burst.

Note: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	29.0	33.4	39.1	45.6	51.9	56.9
1978	61.3	64.5	69.6	76.9	83.2	89.3	97.4	104.0	108.4	111.0	113.3	116.7
1979	122.8	130.4	136.1	141.0	147.4	153.7	158.7	162.1	164.4	165.7	166.1*	165.4
							(2)	(5)	(7)	(10)	(13)	(17)
1980	163.4	161.5	160.0	159.5	158.4	154.5	150.1	146.5	144.3	143.2	141.7	140.4
	(20)	(21)	(22)	(26)	(29)	(33)	(37)	(39)	(40)	(41)	(43)	(46)
1981	140.5	140.1	137.4	134.2	131.3	128.4	127.2	127.1	126.5	125.1	122.5	119.0
	(48)	(47)	(46)	(44)	(45)	(45)	(43)	(42)	(41)	(41)	(40)	(38)
1982	115.4	111.8	109.4	107.4	104.9	102.4	98.4	93.2	88.5	83.4	79.8	76.2
	(36)	(35)	(34)	(33)	(31)	(29)	(27)	(26)	(24)	(22)	(21)	(20)
1983	72.1	69.2	67.3	65.3	63.1	60.5	58.4	56.6	54.7	53.6	52.7	51.7
	(20)	(20)	(21)	(21)	(21)	(22)	(24)	(25)	(27)	(29)	(30)	(31)
1984	50.3	48.1	44.8	41.0	38.4	37.4	36.5	35.0	33.4	32.0	30.6	28.8
	(31)	(30)	(29)	(29)	(30)	(32)	(32)	(32)	(31)	(29)	(28)	(28)
1985	27.7	27.0	26.3	25.8	25.2	24.1	23.2	22.3	21.6	20.8	19.9	19.3
	(27)	(27)	(27)	(27)	(26)	(25)	(24)	(23)	(23)	(24)	(24)	(25)
1986	18.8	17.9	17.1	16.0	14.6	13.3	12.4	11.8	11.6	11.3	11.1	11.2
	(25)	(25)	(24)	(23)	(22)	(21)	(20)	(19)	(18)	(16)	(15)	(14)
1987	11.6	12.1	13.0	14.1	15.2	16.3	17.5					
	(12)	(12)	(12)	(12)	(13)	(14)	(15)					

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1978 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1979 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*. February 1979) indicates that the most probable value for sunspot maximum is 165 ± 17.

Hα SOLAR FLARES

DECEMBER 1979

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
ATHN	01	0719E	0720U	0800	S13	E67	.914		6.3	41D	SB	3	C		32		DE
ISTA	01	0845		0915	S23	E51	.782		5.2	30	SF						D
ISTA	01	0855		0910	S28	E90	.998		8.1	15	SF						D
RAMY	01	1301	1304	1310	S15	E63	.884		6.3	9	SF	3	C		25		
RAMY	01	1414	1416	1430	S14	E62	.876		6.2	16	SF	3	C		18		
HOLL	01	1436	1450	1512	S13	E60	.859		6.1	36	SF	3	C		18		
BIGB	01	1516	1521	1537	N31	E20	.679		3.1	21	SN		C	1521	60	.6	G
BIGB	01	1758	1800	1817	N31	E20	.679		3.2	19	SN		C	1800	50	.5	G
BIGB	01	1824	1830	1857	N31	E20	.679		3.3	33	SN		C	1830	40	.4	G
RAMY	01	1933	1938	1946	S23	E80	.978		7.8	13	SF	3	C		0		
BIGB	01	1935	1940	1947	S23	E85	.992		8.2	12	SN		C	1940	50		
BIGB	01	2037	2039	2057	S18	E20	.379		3.4	20	SN		C	2039	30	.3	
BIGB	01	2212	2219	2306	N27	E25	.668		3.8	54	SN		C	2219	30	.3	G
BIGB	01	2229	2233	2245	N11	W05	.324		1.6	16	SN		C	2233	30	.3	G
HOLL	01	2229	2229	2246	N11	W 6	.328		1.5	17	SF	3	C		25		
WEND	02	1052		1104	S20	E15	.331		3.6	12	SN		C	1054	60	.7	D
WEND	02	1256		1355D	S24	E70	.933		7.8	59D	SN		C	1310	62		
RAMY	02	1305	1308	1336	S24	E67	.914		7.6	31	SF	3	C		19		
WEND	02	1345		1355D	S25	E39	.659		5.5	10D	SF		C	1351	50	.7	E
RAMY	02	1649	1655	1729D	S25	E35	.614		5.3	40D	SN	3	C		44		F
HOLL	02	1858	1900	1908	S22	E68	.920		7.9	10	SF	3	C		63		
BIGB	02	1907	1909	1939	S28	E90	.998		9.5	32	SN		C	1909	100		
BIGB	02	1939	1941	1953	S11	E90	1.000		9.6	14	SN		C	1941	50		
WEND	03	1035	1037	1044	S25	E25	.496		5.3	9	SF		C	1037	28	.3	D
WEND	03	1106	1115	1130	S25	E25	.496		5.3	24	SN		C	1115	38	.5	D
WEND	03	1136	1140	1148	S22	E20	.411		5.0	12	SF		C	1140	18	.2	
RAMY	03	1437	1437	1440	S19	E 0	.204		3.6	3	SF	3	C		25		
HOLL	03	1500	1515	1620	S23	E52	.791		7.5	80	2B	2	C		584		U F
RAMY	03	1501	1513	1612	S22	E52	.790		7.5	71	2B	3	C		409		DE S
BIGB	03	1514E	1514U	1640	S24	E54	.812		7.7	86D	2B		P	1514	380	6.7	
RAMY	03	1536	1543	1559	S13	E36	.586		6.4	23	SF	3	C		32		F
HOLL	03	1537	1543	1555	S15	E36	.589		6.4	18	SN	3	C		22		
HOLL	03	1755	1755	1802	S16	W 4	.167		3.4	7	SF	3	C		23		
BIGB	03	1804	1810	1815	N03	E90	1.000		10.5	11	SN		C	1810	30		
HOLL	03	1848	1859	1901	S12	W61	.868		27.2	13	SF	3	C		19		
HOLL	03	2027	2032	2048	S15	W 6	.169		3.4	21	SN	3	C		29		
PALE	03	2250	2255	2313	S16	W 7	.193		3.4	23	SF	3	C		76		F
PALE	03	2320	2321	2325	S25	E20	.440		5.5	5	SF	3	C		25		F
PALE	03	2347	2358	0017	S15	W 8	.191		3.4	30	SF	3	C		99		F
PALE	04	0225	0226	0236	S16	E30	.509		6.4	11	1N	3	C		194		F
MANI	04	0226	0227	0257D	S15	E30	.506		6.4	31D	1N	3	C		180		F
ISTA	04	0722	0727	0745	S10	W68	.922		27.2	23	SN						E
ISTA	04	0806	0809	0820	S23	E58	.846		8.7	14	SF						D
WEND	04	1030	1043	1053	S17	W14	.289		3.4	23	SF		C	1043	22	.2	E
WEND	04	1240	1246	1252	S21	W10	.289		3.8	12	SN		C	1246	47	.5	E
WEND	04	1309		1412D	S17	W17	.330		3.3	63D	1N		C	1353	210	2.4	F
RAMY	04	1319	1323	1423	S17	W17	.330		3.3	64	SN	3	C		80		F
HOLL	04	1509	1513	1518	S16	W15	.294		3.5	9	SN	3	C		29		
HOLL	04	1513	1514	1519	S18	W18	.351		3.3	6	SN	3	C		36		
BIGB	04	1613	1614	1623	S18	W17	.338		3.4	10	SN		C	1614	50	.5	
BIGB	04	1729	1730	1737	S29	E15	.438		5.9	8	SN		C	1730	50	.5	
BIGB	04	1805	1807	1830	S18	W17	.338		3.5	25	SN		C	1807	90	1.0	
HOLL	04	1806	1808	1820	S13	W18	.319		3.4	14	SN	3	C		46		
HOLL	04	1813	1817	1827	S24	E48	.753		8.4	14	SB	3	C		81		
RAMY	04	1815	1818	1830	S25	E42	.693		7.9	15	SB	3	C		59		FDE
BIGB	04	1846	1847	1858	S29	E15	.438		5.9	12	SN		C	1847	50	.5	
HOLL	04	1852	1853	1856	S22	E 7	.280		5.3	4	SN	3	C		31		
PALE	04	2123E	2124	2208	S11	W21	.359		3.3	45D	1N	2	C		234		DE
HOLL	04	2127E	2153	2243	S14	W23	.400		3.2	76D	SB	3	C		111		UDE
BIGB	04	2139	2149	2300	S17	W23	.414		3.2	81	SB		C	2149	100	1.1	
HOLL	04	2141	2153	2155D	S14	W23	.400		3.2	14D	SB	3	C		111		
HOLL	04	2151	2154	2227	S15	W21	.375		3.3	36	SF	3	C		32		U
BIGB	04	2201	2204	2208	S18	W17	.338		3.6	7	SN		C	2204	40	.4	
PALE	04	2208	2208	2217	S11	W49	.749		1.2	9	SF	3	C		37		
BIGB	04	2327	2334	2341D	S08	W85	.995		26.6	14D	SN		P	2334	90		
MONT	05	0939	0944	1013	S15	E11	.230		6.2	34	SN		C	0944	100		E
WEND	05	0940	0957	1032	S17	E13	.276		6.4	52	SN		C	0957	120	1.3	F
MONT	05	1144	1146	1150	S15	E09	.204		6.2	6	SF		C	1146	50		E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LONG. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONO.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	05	1228	1229	1236	S11	W90	1.000		26.8	8	SF	3	C		0		
RAMY	05	1248	1248	1311	S11	W85	.994		27.2	23	SF	3	C		0		
HOLL	05	1506	1516	1606	S24	E 2	.290			60	1B	1	C		312		DE
RAMY	05	1520	1520	1635	S24	W 4	.295			75	SN	3	C		92		
HOLL	05	1649	1657U	1700D	S24	E 1	.289			110	SN	1	C		77		
BIGB	05	1657	1658	1727	S17	E00	.169			30	SN		C	1658	40	.4	
BIGB	05	1825	1833	1853	S16	E05	.174			28	SN		C	1833	40	.4	
HOLL	05	1832	1835	1841	S13	E 8	.169			9	SN	3	C		30		
BIGB	05	2015	2022	2042	S16	E35	.578			27	SN		C	2022	90	1.1	
BIGB	05	2016	2022	2049	S16	E05	.174			33	SN		C	2022	80	.8	
HOLL	05	2017	2018	2032	S15	W31	.520			15	SF	2	C		20		
HOLL	05	2017	2020	2041	S13	E 5	.132			24	SN	2	C		56		
HOLL	05	2019	2019	2031	S14	W32	.532			12	SN	2	C		27		
MANI	06	0357E	0357U	0359D	S15	W38	.616			3.3	20	SN	3	C		80		
MONT	06	0906	0908	0913	S26	W09	.352			5.7	7	SF		C	0908	50		E
MONT	06	1012	1014	1020	S15	W04	.151			6.1	8	SF		C	1014	50		E
MONT	06	1117	1122	1132	S26	W10	.359			5.7	15	SF		C	1122	70		E
MONT	06	1132	1140	1152	S15	W04	.151			6.2	20	SF		C	1140	70		
MONT	06	1142	1208	1232D	N15	W57	.872			2.2	50D	SF		C	1208	50		DH
HOLL	06	1719	1724	1754	S15	W 8	.191			6.1	35	SN	3	C		125		
RAMY	07	1205	1205	1215	S20	W54	.807			3.5	10	SF	3	C		20		
HOLL	07	1443	1446	1524	S17	W20	.372			6.1	41	SN	1	C		126		F
RAMY	07	1444	1447	1520	S18	W20	.379			6.1	36	SN	3	C		171		
HOLL	07	1457	1503	1524	S17	W20	.372			6.1	27	SF	3	C		63		
BIGB	07	1516E	1516U	1618	S17	W20	.372			6.1	62D	SN		P	1516	130	1.4	
RAMY	07	1627	1628	1633	S13	E21	.366			9.3	6	SF	3	C		22		
PALE	07	1912	1918	1926	N 8	E27	.514			9.8	14	SF	3	C		34		DE
RAMY	07	1914	1918	1926D	S27	W27	.535			5.8	12D	SN	3	C		171		F
BIGB	07	1914	1917	2012	S25	W32	.578			5.4	58	SB		C	1917	120	1.5	
HOLL	07	1915	1918	1936	S27	W27	.535			5.8	21	SB	3	C		171		F
PALE	07	1916	1918	1936	S26	W29	.550			5.6	20	SB	3	C		178		FDE
PALE	07	1943	1948	2000	S17	W60	.859			3.3	17	SF	3	C		55		DE
RAMY	07	1943	1950U	2021	S18	W62	.876			3.2	38	SN	3	C		63		
HOLL	07	1943	1947	2006	S18	W62	.876			3.2	23	SN	3	C		38		F
PALE	07	1945	1947	1951	N11	E55	.845			11.9	6	SF	3	C		14		DE
HOLL	07	2058	2059	2107	S18	W61	.868			3.3	9	SN	3	C		31		F
MANI	08	0531E	0531U	0540D	S13	E16	.288			9.4	90	SN	3	C		80		F
ISTA	08	0840		0848	S31	E80	.977			14.4	8	SF						E
HOLL	08	1525	1530	1601	N22	E28	.644			10.7	36	SN	3	C		68		
HOLL	08	1534	1535	1557	N 9	E15	.376			9.8	23	SN	3	C		30		
HOLL	08	1539	1539	1547	N15	E58	.880			13.0	8	SF	3	C		18		
HOLL	08	1545	1559	1647	S25	W43	.703			5.4	62	SN	3	C		69		
HOLL	08	1545	1546	1630	S18	W34	.571			6.1	45	SN	3	C		50		F
BIGB	08	1549E	1549U	1721	S17	W32	.540			6.3	92D	SB		P	1549	150	1.8	
RAMY	08	1635	1655	1719	S17	W73	.949			3.2	44	SF	3	C		0		
BIGB	08	1638	1639	1652	N25	E80	.995			14.7	14	SN		C	1639	100		
HOLL	08	1712	1713	1728	N15	E57	.872			13.0	16	SF	3	C		57		
BIGB	08	1759	1800	1808	S23	W04	.279			8.4	9	SN		C	1800	50	.5	
BIGB	08	1911	1913	1918	N09	E15	.376			9.9	7	SN		C	1913	30	.3	
BIGB	08	1912	1916	1927	N12	W90	1.000			2.1	15	SN		C	1916	20		
HOLL	08	1920	1923	1930	S16	W32	.537			6.4	10	SN	3	C		26		
BIGB	08	1922	1923	1938	N15	W32	.626			6.4	16	SB		C	1923	30	.4	
BIGB	08	1935	1940	1949	N12	W90	1.000			2.1	14	SN		C	1940	30		
HOLL	08	1941	1945	2011	S12	E10	.190			9.6	30	SF	3	C		50		
HOLL	08	1955	1956	2019	S15	E45	.704			12.2	24	SF	3	C		60		
BIGB	08	1959	2008	2022	N12	W90	1.000			2.1	23	SN		C	2008	30		
HOLL	08	2022	2101	2117	S15	E44	.692			12.1	55	SF	3	C		48		
PALE	08	2030	2056	2057	S16	E44	.693			12.2	27	SF	3	C		42		
BIGB	08	2031	2036	2106	N07	E13	.330			9.8	35	SB		C	2036	40	.4	
HOLL	08	2032	2035	2102	N 7	E12	.319			9.8	30	SB	3	C		55		F
PALE	08	2033	2036	2046	N 7	E13	.330			9.8	13	SN	3	C		37		F
BIGB	08	2034	2043	2055	N12	W90	1.000			2.1	21	SN		C	2043	20		
BIGB	08	2101	2103	2112	N12	W90	1.000			2.1	11	SN		C	2103	30		
HOLL	08	2139	2202	2216	N 8	E10	.313			9.7	37	SF	3	C		34		
HOLL	08	2144	2145	2219	S12	E 8	.160			9.5	35	SN	3	C		47		
HOLL	08	2149	2149	2155	N27	E69	.966			14.1	6	SF	3	C		0		
HOLL	08	2157	2215	2239	S14	E43	.679			12.1	42	SN	3	C		31		
PALE	08	2158	2158	2242D	S16	E43	.681			12.1	44D	SF	3	C		55		
PALE	08	2201	2204	2210	N 6	E12	.307			9.8	9	SF	3	C		20		F

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OBSERV-ATORY	OBSERVED UT				LOCATION				CMP. DAY	DURA-TION MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION				CONO.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	08	2218	2223	2232	N12	W90	1.000		2.2	14	SN		C	2223	20		
BIGB	08	2322	2327	2335	N12	W90	1.000		2.2	13	SB		C	2327	30		
MANI	09	0400E	0400U	0402D	S14	W37	.601		6.4	20	SF	3	C		50		
ISTA	09	0705E		0738	N27	E72	.976		14.7	33D	SF						D
ISTA	09	0705E		0755	S10	E01	.051		9.4	50D	SN						D
ISTA	09	0825		0840	N24	E65	.943		14.2	15	SF						D
ISTA	09	0850		0915	S16	E41	.656		12.4	25	SF						D
ATHN	09	0900E	0905U	0935	S18	E38	.623		12.2	35D	SB	3	C		95		DE
BIGB	09	1552	1553	1605	S14	W43	.679		6.4	13	SB		C	1553	10	.1	D
RAMY	09	1630	1635	1638	S15	E30	.506		11.9	8	SN	3	C		26		
BIGB	09	1631	1634	1653	S15	E32	.534		12.1	22	SN		C	1634	40	.5	
BIGB	09	1631	1633	1645	S07	W05	.087		9.3	14	SN		C	1633	20	.2	
BIGB	09	1634	1637	1716	N17	E61	.906		14.3	42	SN		C	1637	50	1.0	
HOLL	09	1638E	1642	1645D	N25	E58	.906		14.0	7D	SB	3	C		80		F
BIGB	09	1739	1740	1750	S13	W45	.702		6.4	11	SN		C	1740	20	.3	
BIGB	09	1750	1751	1813	S15	E31	.520		12.1	23	SN		C	1751	60	.7	
BIGB	09	1833	1834	1844	S15	E30	.506		12.0	11	SN		C	1834	40	.4	
RAMY	09	1833	1833	1842	S15	E31	.520		12.1	9	SN	3	C		20		
BIGB	09	1910	1911	1921	S16	E90	.999		16.5	11	SN		C	1911	20		
BIGB	09	2120	2122	2130	N19	E48	.810		13.5	10	SN		C	2122	20	.3	
HOLL	09	2124	2124	2129	N20	E45	.788		13.3	5	SN	3	C		18		
HOLL	09	2150	2151	2154	S15	E28	.477		12.0	4	SN	3	C		21		
BIGB	09	2212	2214	2242	S15	W90	.999		3.2	30	SN		C	2214	20		
BIGB	09	2241E	2241U	2246	S15	E28	.477		12.0	5D	SN		P	2241	20	.2	
BIGB	09	2255	2257	2313	S15	W90	.999		3.2	18	SN		C	2257	20		
RAMY	10	1402	1402	1409	S34	E 1	.451		10.7	7	SF	3	C		20		
BIGB	10	1522	1527	1538	S15	W90	.999		3.9	16	SN		C	1527	70		
RAMY	10	1527	1539	1542	N24	E46	.816		14.1	15	SF	3	C		18		
BIGB	10	1634	1641	1655	S15	E25	.434		12.6	21	SN		C	1641	40	.5	
RAMY	10	1636	1645	1651	S15	E17	.315		12.0	15	SF	3	C		20		
HOLL	10	1758	1800	1804	S33	E 0	.435		10.7	6	SF	3	C		53		
BIGB	10	1758	1800	1801	S34	W03	.452		10.5	3	SN		C	1800	60	.6	
RAMY	10	1759	1759	1803	S34	W 1	.451		10.7	4	SF	3	C		28		
RAMY	10	1818	1820	1822	S15	E16	.301		12.0	4	SF	3	C		25		
BIGB	10	1835	1839	1844	S34	W03	.452		10.5	9	SN		C	1839	40	.4	
HOLL	10	1848	1848	1858	N26	E46	.826		14.2	10	SN	3	C		22		
BIGB	10	1907	1908	1918	S21	W75	.959		5.2	11	SN		C	1908	30		
BIGB	10	1915	1916	1925	S14	W58	.841		6.5	10	SN		C	1916	60	1.1	
BIGB	10	2105	2107	2111	S24	W80	.978		4.9	6	SN		C	2107	40		
BIGB	10	2107	2108	2110	S14	W60	.859		6.4	3	SN		C	2108	40	.3	
PALE	11	0208	0209	0218	N24	E41	.774		14.2	10	SF	3	C		23		F
PALE	11	0243	0243	0248	S16	E13	.266		12.1	5	SN	3	C		70		F
RAMY	11	1202	1205	1241	N26	E41	.786		14.6	39	SF	3	C		35		
RAMY	11	1204	1214	1309	N11	E 5	.324		11.9	65	SN	3	C		119		
RAMY	11	1438	1453	1458	N10	W10	.340		10.9	20	SF	3	C		27		
RAMY	11	1452	1452	1458	N20	E20	.553		13.1	6	SN	3	C		23		F
RAMY	11	1507	1514	1600	N10	W10	.340		10.9	53	SF	3	C		59		
BIGB	11	1530	1531	1543	N11	W09	.347		11.0	13	SN		C	1531	70	.7	
BIGB	11	1612	1614	1622	S34	E35	.668		14.3	10	SN		C	1614	40	.5	
BIGB	11	1643	1644	1647	N11	W13	.380		10.7	4	SB		C	1644	40	.4	
BIGB	11	1656	1658	1722	N13	E17	.444		13.0	26	SN		C	1658	60	.6	
BIGB	11	1708	1710	1715	N25	E35	.730		14.3	7	SN		C	1710	70	.9	
BIGB	11	1721	1722	1745	S35	W13	.503		10.7	24	SN		C	1722	60	.6	
BIGB	11	1725	1728	1810	N14	W64	.920		6.9	45	SN		C	1728	30	.7	
PALE	11	1839	1839	1851	N24	E32	.697		14.2	12	SF	3	C		24		
PALE	11	1844	1847	1853	N22	W16	.547		10.6	9	SF	3	C		26		
PALE	11	1851	1853	1854	S19	E73	.949		17.3	3	SF	3	C		17		
PALE	11	1912	1915	1945	N19	E18	.525		13.2	33	SF	3	C		25		H
BIGB	11	1912	1917	1939	N09	W24	.483		10.0	27	SN		C	1917	20	.2	
BIGB	11	1941	1943	2000	N11	W12	.371		10.9	19	SF		C	1943	30	.3	
PALE	11	1942	1955	2038	N 9	W12	.345		10.9	56	SF	3	C		91		
PALE	11	1955	2003	2014	N11	E16	.410		13.0	19	SF	3	C		28		
BIGB	11	1955	2001	2005	S25	W90	.999		5.1	10	SN		C	2001	70		
BIGB	11	1955	1957	2010	S14	W74	.955		6.3	15	SB		C	1957	40		
BIGB	11	2003	2004	2010	S41	W90	.997		5.1	7	SN		C	2004	50		
PALE	11	2014	2015	2021	N24	E31	.688		14.2	7	SF	3	C		26		
BIGB	11	2135	2137	2146	N25	E31	.697		14.2	11	SN		C	2137	60	.7	
BIGB	11	2149	2151	2154	N25	E31	.697		14.2	5	SN		C	2151	50	.6	
BIGB	11	2202	2203	2212	S17	W41	.658		8.8	10	SN		C	2203	30	.4	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	11	2202	2236	2212	N15	E35	.659		14.5	10	SN		C	2206	30	.4	
BIGB	11	2220	2226	2235	S25	W90	.999		5.2	15	SN		C	2226	40		
PALE	11	2222	2226	00140	S19	E71	.938		17.3	1120	SF	3	C		26		
BIGB	11	2237	2249	2341	S14	E70	.933		17.2	64	SN		C	2249	80		
BIGB	11	2243	2251	2349	N25	E30	.688		14.2	66	1B		C	2251	200	2.4	
BIGB	11	2313	2315	2317	N20	E15	.515		13.1	4	SN		C	2315	60	.6	
PALE	12	0118E		01520	N10	W14	.377		11.0	340	SF	3	C		38		
PALE	12	0216	0216	0300	S30	E10	.417		12.8	44	SF	3	C		21		
MONT	12	0955E	0958	1016	N11	W16	.410		11.2	210	SN		C	0958	110		
MONT	12	1012E	1014	1020	N19	E09	.465		13.1	80	SB		C	1014	200		H
RAMY	12	1521	1536	1537	S21	E64	.892		17.4	16	SF	3	C		13		
RAMY	12	1522	1528	1608	N11	W72	.961		7.2	46	SF	3	C		0		
RAMY	12	1617	1618	1636	S15	W43	.680		9.5	19	SF	3	C		30		
BIGB	12	1618	1623	1721	S25	W65	.931		7.8	63	SN		C	1623	30		
BIGB	12	1618	1621	1640	S14	W43	.679		9.5	22	SN		C	1621	50	.7	
RAMY	12	1650	1654	1710	S21	E64	.892		17.5	20	SF	3	C		39		
BIGB	12	1656	1658	1714	N17	E24	.558		14.5	18	SF		C	1658	30	.3	
BIGB	12	1704	1708	1739	N12	W25	.521		10.8	35	SB		C	1708	100	1.1	
RAMY	12	1704	1706	1734	N11	W25	.513		10.8	30	SB	3	C		132		
BIGB	12	1704	1705	1735	N11	W23	.489		11.0	31	1N	1			200	2.2	
BIGB	12	1713	1714	1740	N12	W80	.990		6.7	27	SB		C	1714	90		
RAMY	12	1713	1715	1739	N11	W77	.981		6.9	26	1B	3	C		0		
BIGB	12	1714	1714	1734	N11	W78	.984		6.9	20	1N	1			75		
RAMY	12	1715	1736	1830	S21	E63	.885		17.4	75	SF	3	C		27		
BIGB	12	1716	1718	17490	N10	W40	.687		9.7	330	SF		P	1718	40	.5	
RAMY	12	1753	1753	1801	N11	W25	.513		10.9	8	SN	3	C		21		
BIGB	12	1834	1836	1856	N09	W40	.682		9.8	22	SN		C	1836	40	.5	
RAMY	12	1835	1836	1845	S21	E63	.885		17.5	10	SF	3	C		23		
BIGB	12	1900	1901	1911	S03	W66	.912		7.8	11	SN		C	1901	50		
BIGB	12	1925	1927	1942	S03	W66	.912		7.9	17	SN		C	1927	50		
BIGB	12	1930	1932	2019	N19	E11	.475		13.6	49	SN		C	1932	60	.6	
RAMY	12	2003	2013	2021	S21	E62	.877		17.5	18	SF	3	C		23		
BIGB	12	2058	2059	2111	N21	E17	.542		14.1	13	SN		C	2059	50	.5	
BIGB	12	2105	2111	2131	S03	W66	.912		7.9	26	SN		C	2111	70		
BIGB	12	2211	2212	2236	S25	W70	.933		7.7	27	SN		C	2212	60		
PALE	12	2222	2226	00140	S19	E71	.938		18.3	1120	SF	3	C		26		
PALE	13	0122E	0132U	0216	N32	E18	.679		14.4	540	SF	1	C		85		F
MONT	13	0802E	0806	0813	N20	E10	.484		14.1	110	SN		C	0806	80		E
MANI	13	0813	0816U	0821	N24	E10	.540		14.1	8	SF	2	C		15		
MONT	13	0816	0848	0935	N25	E17	.591		14.6	79	1N		C	0848	440		
MANI	13	0819	0824	08400	N25	E16	.585		14.5	210	SN	2	C		70		F
MONT	13	0820	0822	0830	S13	W77	.969		7.6	10	SN		C	0822	50		D
WEND	13	0828E		08550	N25	E18	.597		14.7	270	1N		C	0850	190	2.3	F
MONT	13	0914	0917	0925	N11	E36	.645		16.1	11	SF		C	0917	50		DG
ATHN	13	0915E	0916U	0930	N10	E41	.698		16.5	150	SB	3	C		64		DE
ATHN	13	0950E	0952U	09530	S21	W70	.932		8.2	30	SN	3	C		48		DE
WEND	13	0951E		10120	S13	W74	.956		7.9	210	SF		C	1000	28		
MONT	13	1216	1230	12300	S30	W49	.780		9.8	140	SN		C	1230	80		E
RAMY	13	1353	1353	1357	N11	W89	1.000		6.9	4	SF	3	C		0		
RAMY	13	1527E	1527	1540	N10	W38	.664		10.8	130	SF	2	C		26		F
BIGB	13	1618	1627	1638	N11	W90	1.000		6.9	20	SN		C	1627	90		
BIGB	13	1744	1745	1821	N21	E53	.859		17.7	37	SB		C	1745	30	.5	
RAMY	13	1816	1819	1847	N17	E10	.441		14.5	31	SF	2	C		78		
BIGB	13	1816	1819	1833	N18	E11	.461		14.6	17	SF		C	1819	30	.3	
RAMY	13	1915	1919	1938	N27	E 7	.572		14.3	23	SN	3	C		47		
BIGB	13	1917	1920	1939	N25	E07	.543		14.3	22	SN		C	1920	30	.3	
RAMY	13	1923	1929	1945	N11	W25	.512		11.9	22	SN	3	C		47		F
BIGB	13	1926	1928	1943	N11	W25	.512		11.9	17	SN		C	1928	30	.3	
BIGB	13	2058	2105	2200	S36	W43	.751		10.6	62	1B		C	2105	310	4.4	
RAMY	13	2059	2102	21110	S33	W42	.727		10.7	120	SB	3	C		139		
BIGB	13	2306	2310	2333	S22	E47	.738		17.5	27	SB		C	2310	80	1.2	
ATHN	14	0615E	0617U	0632	S16	W29	.495		12.1	170	1B	3	C		254		F
ATHN	14	0818E	0819U	0832	N 8	W55	.838		10.2	140	SB	3	C		48		DE
ATHN	14	0838E	0839U	0902	S14	W75	.960		8.7	240	SB	3	C		0		DE
ATHN	14	0915E	0916U	0948	S26	E40	.675		17.4	330	SB	3	C		32		DE
ATHN	14	0937E	0939U	1020	N13	W 4	.351		14.1	430	SB	3	C		80		F
ATHN	14	1047E	1048U	10520	N19	W12	.481		13.5	50	SN	3	C		95		DE
ATHN	14	1310E	1311U	13310	S19	W42	.675		11.4	210	1B	3	C		190		F
BIGB	14	1532	1533	1551	N11	W51	.808		10.8	19	SB		C	1533	70	1.1	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	14	1532	1533	1541	N16	E01	.394		14.7	9	SN		C	1533	70	.7	
BIGB	14	1553	1557	1634	N11	W51	.808		10.8	41	1B		C	1557	160	2.6	
RAMY	14	1607E	1607U	1634D	N10	W50	.795		10.9	27D	SN	2	C		118		
BIGB	14	1637	1638	1650	S17	W32	.541		12.3	13	SN		C	1638	20	.2	
RAMY	14	1638	1647U	1719D	N 6	W64	.908		9.9	41D	SN	2	C		33		
BIGB	14	1642	1644	1711	N07	W64	.909		9.9	29	SN		C	1644	40	.9	
RAMY	14	1729	1733	1749	S13	W35	.572		12.1	20	SF	2	C		37		F
BIGB	14	1731	1737	1752	S15	W35	.576		12.1	21	SN		C	1737	40	.5	
RAMY	14	1759	1805	1811	S17	W33	.554		12.3	12	SN	3	C		40		
RAMY	14	1800	1801	1826	S15	W77	.969		9.0	26	SB	3	C		0		
BIGB	14	1800	1802	1822	S14	W80	.980		8.8	22	SB		C	1802	40		
BIGB	14	1803	1805	1828	S16	W34	.565		12.2	25	SN		C	1805	40	.5	
BIGB	14	1837	1838	1852	N14	W01	.362		14.7	15	SN		C	1838	30	.3	
BIGB	14	1912	1913	1950	N11	W02	.314		14.7	38	SN		C	1913	30	.3	
BIGB	14	1928	1930	1951	N16	W06	.406		14.4	23	SF		C	1930	30	.3	
BIGB	14	2020	2022	2041	S15	W90	.999		8.1	21	SN		C	2022	30		
BIGB	14	2055	2100	2123	N08	W67	.930		9.8	28	SN		C	2100	40		
BIGB	14	2103	2108	2134	N12	W54	.839		10.8	31	1N		C	2108	140	2.5	
BIGB	14	2139	2141	2146	S15	W37	.603		12.1	7	SN		C	2141	50	.6	
BIGB	14	2245	2254	2313	N26	W18	.609		13.6	28	SN		C	2254	30	.3	
MANI	15	0335E	0335U	0343D	S17	E28	.485		17.2	8D	SN	3	C		30		F
MONT	15	0855	0901	0913	N17	W15	.475		14.2	18	1N		C	0901	250		
BIGB	15	1523	1526	1542	N06	W78	.981		9.8	19	SB		C	1526	50		
BIGB	15	1524	1525	1534	S15	W55	.813		11.5	10	SB		C	1525	20	.4	
HOLL	15	1525	1527	1533	N 5	W77	.977		9.9	8	SF	3	C		0		
BIGB	15	1625	1627	1643	S15	W55	.813		11.6	18	SB		C	1627	50	.9	
BIGB	15	1625	1634	1644	S15	W65	.899		10.8	19	SB		C	1634	70		
BIGB	15	1626	1627	1639	N08	E03	.267		15.9	13	SN		C	1627	20	.2	
BIGB	15	1701	1704	1726	S18	E25	.449		17.6	25	SB		C	1704	50	.6	
BIGB	15	1717	1718	1727	N11	W64	.915		10.9	10	SN		C	1718	30	.7	
BIGB	15	1730	1737	1758	N19	W31	.646		13.4	28	SN		C	1737	20	.2	
BIGB	15	1809	1811	1828	N08	E02	.264		15.9	19	SN		C	1811	20	.2	
BIGB	15	1823	1826	1833	S14	W90	1.000		9.0	10	SN		C	1826	30		
BIGB	15	1842	1844	1904	N19	W25	.587		13.9	22	SB		C	1844	20	.2	
BIGB	15	1900	1903	1911	N20	W31	.654		13.5	11	SN		C	1903	30	.4	
BIGB	15	1937	1942	2000	S17	E90	.999		22.6	23	SN		C	1942	80		
BIGB	15	1939	1942	2016	S18	E20	.379		17.3	37	SB		C	1942	40	.4	
BIGB	15	2005	2006	2022	N09	E01	.279		15.9	17	SN		C	2006	20	.2	
BIGB	15	2018	2023	2104	S16	E90	.999		22.6	46	SB		C	2023	140		
BIGB	15	2018	2021	2052	N21	W26	.616		13.9	34	SF		C	2021	50	.5	
BIGB	15	2055	2056	2136	N19	W32	.656		13.5	41	SN		C	2056	40	.5	
BIGB	15	2125	2127	2147	N17	E27	.588		17.9	22	SN		C	2127	40	.5	G
BIGB	15	2139	2143	2150	S28	W90	.998		9.2	11	SN		C	2143	80		
BIGB	15	2144	2147	2154	S23	E23	.457		17.6	10	SF		C	2147	50	.6	
BIGB	15	2329	2330	2347D	N25	W22	.625		14.3	18D	SN		P	2330	90	1.0	
ATHN	16	0650	0655	0706D	S15	W55	.813		12.2	16D	SB	3	C		64		F
MANI	16	0700E	0700U	0707D	S15	W55	.813		12.2	7D	SN	3	C		40		F
ISTA	16	0845		0857D	N19	W37	.705		13.6	12D	SF						E
BIGB	16	1615	1618	1655	N15	W31	.614		14.4	40	SB		C	1618	90	1.0	
RAMY	16	1615	1616	1650	N16	W31	.622		14.4	35	SB	3	C		137		
BIGB	16	1723	1726	1746	N04	W28	.501		14.6	23	SN		C	1726	50	.6	G
BIGB	16	1815	1819	1851	N04	W28	.501		14.7	36	SN		C	1819	40	.5	G
RAMY	16	1815	1818	1833	N 3	W29	.510		14.6	18	SF	3	C		55		
BIGB	16	1837	1840	1902	S13	W62	.876		12.1	25	SB		C	1840	30	.7	D
BIGB	16	2032	2033	2047	N12	E09	.361		17.5	15	SN		C	2033	30	.3	
RAMY	16	2048	2049	2129	N16	W34	.654		14.3	41	SF	3	C		29		
BIGB	16	2123	2125	2135	N23	W36	.724		14.2	12	SB		C	2125	60	.8	
HOLL	16	2123	2127	2138	N19	W43	.764		13.7	15	SB	3	C		62		
BIGB	16	2146	2147	2157	N11	E09	.346		17.6	11	SN		C	2147	30	.3	
BIGB	16	2238	2240	2245	N24	W36	.731		14.2	7	SB		C	2240	30	.4	
BIGB	16	2245	2246	2300	N16	W33	.643		14.5	15	SB		C	2248	40	.5	
HOLL	16	2246	2249	2258	N15	W34	.647		14.4	12	SN	3	C		39		
BIGB	16	2318	2320	2344D	N03	W31	.538		14.6	26D	SB		P	2320	60	.8	
ATHN	17	0613E	0615U	0634	S16	W70	.933		12.0	21D	SB	3	C		0		DE
MANI	17	0616E	0617	0624D	S18	W58	.843		12.9	8D	SN	3	C		50		
RAMY	17	1231	1233	1242	S15	W64	.892		12.7	11	SF	3	C		34		
BIGB	17	1516E	1522U	1654D	S17	E64	.892		22.4	98D	1N		P	1522	110	2.5	
BIGB	17	1538	1541	1612	S17	W09	.229		17.0	34	SN		C	1541	140	1.5	
BIGB	17	1608	1609	1620	S12	W73	.951		12.2	12	SB		C	1609	70		

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OBSERV-ATORY	OBSERVED UT				LOCATION				DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
RAMY	17	1609	1609	1621	S14	W72	.945		12.3	12	SF	3	C		0		
HOLL	17	1857	1903	1922	N10	W26	.516		15.8	25	SB	3	C		99		F
BIGB	17	1858	1904	1923	N11	W25	.512		15.9	25	SB		C	1904	70	.8	
BIGB	17	2015	2021	2041	N15	W47	.783		14.3	26	SN		C	2021	60	.9	
BIGB	17	2153	2159	2217	N05	W46	.737		14.5	24	SF		C	2159	30	.4	G
BIGB	17	2251	2252	2259	S21	W05	.254		17.6	8	SN		C	2252	50	.5	
PALE	18	0010	0010	0012	N16	W49	.806		14.3	2	SF	3	C		22		DE
RAMY	18	1400	1411	1415D	N10	W35	.627		16.0	150	SB	3	C		146		
RAMY	18	1407	1412	1415	S15	W78	.973		12.7	8	SF	3	C		14		
RAMY	18	1505	1507	1542	S15	E50	.762		22.4	37	SF	3	C		37		
BIGB	18	1519	1524	1542	S12	W90	1.000		11.9	23	SN		C	1524	60		
BIGB	18	1526	1527	1544	S15	E50	.762		22.4	18	1N		C	1527	150	2.4	
RAMY	18	1655	1714	1720	N 9	W37	.646		15.9	25	SF	3	C		35		
RAMY	18	1704	1707	1717	S15	E49	.751		22.4	13	SF	3	C		85		
BIGB	18	1709	1712	1713D	S12	W90	1.000		12.0	40	SN		P	1712	60		
RAMY	18	1724	1725	1732	N 9	W37	.646		16.0	8	SF	3	C		20		
RAMY	18	1727	1728	1733	N15	W60	.894		14.2	6	SN	3	C		70		
RAMY	18	1754	1756	1811	N 9	W38	.658		15.9	17	SF	3	C		26		
PALE	18	1754E	1756	1811	N 9	W38	.658		15.9	170	SF	3	C		30		FDE
BIGB	18	1801	1804	1813	N27	E90	1.002		25.5	12	SF		C	1804	40		
BIGB	18	1809	1815	1833	N10	W37	.651		16.0	24	SN		C	1815	30	.4	
RAMY	18	1809	1814	1833	N 9	W37	.646		16.0	24	SN	3	C		30		
BIGB	18	1814	1815	1819	S25	W56	.832		14.6	5	SN		C	1815	40	.7	
PALE	18	1814	1815	1821	N 9	W39	.670		15.8	7	SF	3	C		29		DE
PALE	18	1815	1815	1818	S25	W60	.865		14.3	3	SF	3	C		19		DE
HOLL	18	1815	1815	1835D	N 7	W39	.661		15.8	200	SF	3	C		20		
RAMY	18	1828	1831	1834	N25	W59	.912		14.3	6	SF	3	C		19		
BIGB	18	1840	1844	1901	N27	E90	1.002		25.5	21	SF		C	1844	90		
BIGB	18	1902	1906	2042	N10	W38	.663		15.9	100	1B		C	1906	160	2.1	
PALE	18	1902	1904	1935	N 9	W39	.670		15.9	33	1B	3	C		205		FDE
RAMY	18	1915E	1927	1957	N 9	W42	.705		15.7	420	SN	3	C		82		
RAMY	18	2002	2011	2024	N 8	W38	.653		16.0	22	SF	3	C		35		
RAMY	18	2107	2108	2119	N 9	W40	.682		15.9	12	SF	3	C		19		
HOLL	18	2243	2244	2250	N23	W56	.887		14.7	7	SN	3	C		20		
PALE	19	0119	0126	0138	N 8	W40	.677		16.1	19	SF	3	C		27		
PALE	19	0125	0127	0143	N13	W61	.897		14.5	18	1N	3	C		142		DE
PALE	19	0208	0208	0212	S26	W62	.881		14.4	4	SF	3	C		20		
PALE	19	0249	0255	0256	N 9	W43	.717		15.9	7	SF	3	C		22		DE
RAMY	19	1150E	1150	1210	N15	W68	.945		14.4	200	SF	3	C		19		
RAMY	19	1242	1250	1304	S 6	W13	.224		18.6	22	SF	3	C		42		
RAMY	19	1249	1249	1256	N12	W71	.957		14.2	7	SF	3	C		13		
RAMY	19	1317	1323	1325	N12	W72	.962		14.2	8	SF	3	C		0		
RAMY	19	1330	1330	1338	N12	W70	.952		14.3	8	SN	3	C		28		
RAMY	19	1756	1806	1824	N13	W74	.971		14.2	28	SB	3	C		0		
PALE	19	1806E	1807	1817	N13	W72	.963		14.4	110	SN	3	C		0		DE
RAMY	19	1842	1855	1857D	S14	E33	.547		22.3	150	1B	3	C		275		DE
RAMY	19	1845	1855	1940D	S14	E33	.547		22.3	550	1B	3	C		275		
PALE	19	1848	1854	1949	S16	E34	.565		22.3	61	1B	3	C		263		U F
PALE	19	1944	1945	1947	S24	W30	.550		17.6	3	SF	3	C		22		F
MANI	20	0025E	0026	0038D	N10	W53	.824		16.0	130	SN	2	C		80		
ATHN	20	0610E	0615U	0750	S20	E32	.553		22.7	1000	1B	3	C		254		DE
MANI	20	0652E	0652U	0820	S18	E31	.532		22.6	880	SN	2	C		150		F
ATHN	20	0930E	0932U	1013	S18	E25	.449		22.3	430	SB	3	C		190		DE
ATHN	20	1010E	1012U	1013D	S32	W12	.459		19.5	30	SN	3	C		127		DE
ATHN	20	1015E	1017U	1018D	S19	E85	.993		26.8	30	SN	3	C		0		DE
RAMY	20	1246	1309	1349	S 7	W25	.420		18.7	63	SN	3	C		41		
RAMY	20	1258	1318	1347	S15	E28	.478		22.6	49	SN	3	C		30		
RAMY	20	1429	1430	1434	S15	E25	.435		22.5	5	SF	3	C		22		
RAMY	20	1443	1443	1455	N15	W85	.999		14.2	12	SF	3	C		0		
RAMY	20	1505	1510	1512D	S15	E27	.464		22.7	70	SB	3	C		121		
BIGB	20	1528	1529	1547	S08	W28	.466		18.5	19	SN		C	1529	30	.4	
RAMY	20	1530	1530	1542	S 6	W24	.405		18.8	12	SN	3	C		30		
RAMY	20	1544	1607	1725	S15	E23	.405		22.4	101	SB	3	C		180		
HOLL	20	1551	1607	1717	S14	E26	.446		22.6	86	1B	3	C		436		UDE
BIGB	20	1551	1556	1641	S23	W44	.709		17.4	50	1N		C	1556	150	2.1	
BIGB	20	1601	1612	1859	S16	E25	.439		22.5	178	1B		C	1612	210	2.3	
HOLL	20	1605	1612	1627	S 7	W26	.435		18.7	22	SF	3	C		34		
RAMY	20	1605	1610	1625	S 7	W28	.466		18.6	20	SN	3	C		31		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	20	1710	1711	1721	N20	W90	1.001		14.0	11	SB		C	1711	70		
BIGB	20	1728	1743	1753	S09	W30	.496		18.5	25	SB		C	1743	50	.6	
RAMY	20	1729	1809	1827	S 6	W26	.436		18.8	58	SN	3	C		40		
PALE	20	1731E	1744	1818	S 9	W29	.481		18.6	470	SF	3	C		40		
HOLL	20	1737	1743	1748	S11	E22	.376		22.4	11	SF	3	C		25		
HOLL	20	1738	1744	1748	S 7	W27	.451		18.7	10	SF	3	C		44		
BIGB	20	1758	1759	1822	S09	W30	.496		18.5	24	SB		C	1759	50	.6	
BIGB	20	1835	1837	1850	S09	W30	.496		18.5	15	SB		C	1837	40	.5	
BIGB	20	1853	1856	1915	S09	W30	.496		18.5	22	SB		C	1856	50	.6	
RAMY	20	1854	1857	1905	S 6	W26	.436		18.8	11	SN	3	C		48		
PALE	20	1917	1917	1932	S16	E22	.396		22.5	15	SF	3	C		27		
RAMY	20	1943	1947	2001	S 8	W32	.526		18.4	18	SB	3	C		126		
PALE	20	1943	1950	1959	S 8	W32	.526		18.4	16	SN	3	C		65		DE
BIGB	20	1945	1947	2009	S08	W31	.511		18.5	24	1B		C	1947	200	2.4	
HOLL	20	1945	1947	1958	S 6	W31	.512		18.5	13	SN	3	C		73		
PALE	20	2001		2041	S16	E20	.367		22.3	40	SN	3	C		95		DE
RAMY	20	2001	2001	2027	S15	E20	.361		22.3	26	SN	3	C		21		
HOLL	20	2001	2003	2011	S15	E24	.420		22.6	10	SF	3	C		26		
BIGB	20	2018	2029	2050	S09	W30	.496		18.6	32	SB		C	2029	70	.8	
BIGB	20	2019	2021	2027	S32	W12	.459		19.9	8	SN		C	2021	40	.4	
HOLL	20	2023	2028	2035	S13	E25	.428		22.7	12	SB	3	C		68		
HOLL	20	2024	2027	2040	S 7	W29	.481		18.7	16	SB	3	C		67		
RAMY	20	2025	2027	2044	S 7	W29	.481		18.7	19	SB	3	C		68		
BIGB	20	2026	2027	2050	S17	E25	.444		22.7	24	SB		C	2027	60	.7	
PALE	20	2030E		2039	S 8	W32	.526		18.5	9D	SN	3	C		60		
BIGB	20	2053	2054	2116	S09	W30	.496		18.6	23	SB		C	2054	80	1.0	
BIGB	20	2058	2059	2114	S32	W12	.459		20.0	16	SN		C	2059	40	.4	
BIGB	20	2145	2151	2219	S18	E25	.449		22.8	34	SB		C	2151	20	.2	
BIGB	20	2225	2236	2300D	S16	E21	.381		22.5	35D	SB		P	2236	60	.7	
PALE	20	2226	2245	2254	S16	E18	.338		22.3	28	SF	3	C		49		F
BIGB	20	2309	2313	2321	S17	E23	.416		22.7	12	SB		C	2313	50	.6	
PALE	20	2310	2310	2319	S16	E20	.367		22.5	9	SN	3	C		22		F
BIGB	20	2329	2331	2337	S08	W35	.569		18.4	8	SB		C	2331	50	.6	
BIGB	20	2332	2338	2344D	S13	E21	.367		22.6	12D	SN		P	2338	60	.7	
PALE	21	0108	0112	0126	S16	E19	.353		22.5	18	SF	3	C		61		U
PALE	21	0114	0118	0120	S12	E68	.921		26.2	6	SF	3	C		26		
WEND	21	0932E		1048D	S17	E58	.842		25.7	76D	1F		C	1044	225	4.6	L
WEND	21	0943	0949	1048D	S16	E69	.927		26.6	65D	SF		C	0949	40		
WEND	21	1048	1058	1115D	S17	E11	.253		22.3	27D	SN		C	1058	44	.5	E
WEND	21	1056	1101	1115D	S16	E18	.338		22.8	19D	SN		C	1101	100	1.1	E
WEND	21	1211E		1219D	S15	E60	.860		26.0	8D	1N		C	1211	162	3.5	B
RAMY	21	1622	1625	1632	S17	E11	.253		22.5	10	SN	3	C		28		
RAMY	21	1704	1705	1725	S12	E60	.860		26.2	21	SN	3	C		40		
PALE	21	1956	1957	2005	S16	E 8	.206		22.4	9	SF	3	C		50		DE
PALE	21	2154	2155	2156	S16	E 8	.206		22.5	2	SF	3	C		30		
HOLL	22	1826	1830	1834	S12	E53	.793		26.7	8	SF	3	C		42		
MANI	23	0731E	0731U	0743	S 7	W64	.895		18.5	12D	SF	3	C		80		F
WEND	23	1022E		1219D	S07	W69	.930		18.3	117D	SN		C	1039	75		E
BIGB	23	1848	1850	1931	S07	W74	.958		18.2	43	SB		C	1850	90		
HOLL	23	1849	1849	1904	S10	W73	.952		18.3	15	SN	3	C		0		F
RAMY	23	1849	1849	1903	S 8	W71	.942		18.5	14	SN	3	C		48		
BIGB	23	2010	2016	2051D	N19	W59	.896		19.4	41D	SN		P	2016	70	1.4	
BIGB	23	2042	2051U	2051D	S25	E90	.999		30.6	9D	SN		P	2051	120		
HOLL	23	2222	2223	2234	S 9	W75	.962		18.3	12	SF	3	C		0		
PALE	23	2332	2334	2337	S13	E36	.587		26.7	5	SF	3	C		22		
PALE	24	0014	0014	0027	S 9	W74	.957		18.5	13	SN	3	C		79		FDE
PALE	24	0016	0019	0026	S13	E36	.587		26.7	10	SF	3	C		43		FDE
PALE	24	0034	0039	0050	S32	W53	.821		20.0	16	SF	3	C		32		
WEND	24	0917	0925	0938	S21	W59	.854		20.0	21	SF		C	0925	62	1.3	
MONT	24	0923	0935	0954	S15	W28	.479		22.3	31	SN		C	0935	150		
WEND	24	0924	0939	1023	S14	W27	.461		22.4	59	SN		C	0939	170	2.3	
RAMY	24	1225	1233	1305	S15	E28	.479		26.6	40	SN	3	C		102		F
HOLL	24	1512	1517	1543	S23	W64	.894		19.8	31	SN	3	C		44		
MANI	25	0703E	0710	0751D	S16	W42	.670		22.1	48D	SN	2	C		120		F
HOLL	25	1614	1617	1621	S15	E66	.907		30.6	7	SF	3	C		52		
HOLL	25	1902	1912	1925	S14	E66	.907		30.7	23	SB	3	C		80		
RAMY	25	1903	1912	1922	S14	E66	.907		30.7	19	SB	3	C		91		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PALE	25	1904	1912	1917	S14	E66	.907		30.7	13	SF	3	C		38		
HOLL	25	1946	1946	1953	S15	E64	.892		30.6	7	SF	3	C		18		
HOLL	25	1955	1956	2000	S16	E12	.257		26.7	5	SF	3	C		38		
RAMY	25	1955	1955	2001	S15	E11	.234		26.7	6	SN	3	C		35		
HOLL	25	2159	2159	2212	S16	E 9	.220		26.6	13	SN	3	C		73		F
PALE	25	2200	2200	2204	S13	E11	.215		26.7	4	SN	3	C		50		DE
HOLL	25	2233	2233	2326	S16	E 9	.220		26.6	53	SN	3	C		54		
PALE	26	0051	0054	00560	S12	W 1	.092		26.0	50	1N	3	C		263		FDE
RAMY	26	1419	1421	1432	S18	W56	.825		22.4	13	SF	3	C		26		
RAMY	26	1513	1518	1530	S18	W55	.816		22.5	17	SN	3	C		100		
RAMY	26	1629	1633	1657	S18	W55	.816		22.6	28	SN	3	C		47		
BIG3	26	1724	1725U	1737	S14	W02	.129		26.6	13	SN	1			50	.5	
RAMY	26	1725	1727	1731	S15	W 2	.146		26.6	6	SN	3	C		23		
RAMY	26	1756	1808	1820	S15	W 1	.143		26.7	24	SF	3	C		42		
RAMY	26	1834	1838	1914	S24	E54	.813		30.8	40	SN	3	C		69		H
BIG3	26	1837	1838U	1921	S25	E55	.824		30.9	44	SN	1			100	1.7	
PALE	26	1843	1844	1949	S23	E54	.812		30.8	66	SF	3	C		26		FDE
PALE	26	2118	2121	2127	S18	W59	.852		22.5	9	SF	3	C		31		
PALE	26	2153	2154	2203	S18	W59	.852		22.5	10	SN	3	C		22		DE
PALE	26	2204	2206	2212	S18	W61	.869		22.3	8	SN	3	C		57		DE
PALE	26	2208	2209	2214	S14	E50	.762		30.7	6	SF	3	C		18		F
PALE	26	2229	2231U	2237	S15	E50	.762		30.7	8	SF	2	C		32		FDE
PALE	27	0043	0045	0101	S14	E47	.728		30.6	18	SN	3	C		84		FDE
PALE	27	0118	0122	0131	S17	W 4	.189		26.8	13	SF	3	C		61		DE
PALE	27	0227	0229	0232	S14	E46	.716		30.6	5	SN	3	C		36		DE
PALE	27	0245	0252	0255	S14	E46	.716		30.6	10	SF	3	C		39		DE
MANI	27	0445E	0450	04550	S15	E47	.729		30.7	100	SN	3	C		120		F
WEND	27	1245E		1324D	S16	W19	.354		26.1	39D	SF		C	1247	50	.6	
WEND	27	1356	1403	14150	S14	W72	.945		22.2	19D	SN		C	1403	40		
RAMY	27	1359	1359	1405	S15	W70	.933		22.3	6	SF	3	C		0		
RAMY	27	1431	1445	1500	S14	W13	.253		26.6	29	SF	3	C		57		
RAMY	27	1432	1432	1448	S14	W24	.417		25.8	16	SF	3	C		25		
RAMY	27	1502	1506	1515	S22	E43	.696		30.9	13	SF	3	C		27		
RAMY	27	1527	1527	1547	S14	W11	.225		26.8	20	SF	3	C		34		
RAMY	27	1534	1535	1548	N14	E76	.979		2.3	14	SN	3	C		34		
RAMY	27	1626	1627	1635	S13	E40	.641		30.7	9	SF	3	C		35		F
RAMY	27	1709	1715	1733	S14	E40	.642		30.7	24	SN	3	C		49		
HOLL	27	1723	1723	1732	S19	E40	.653		30.7	9	SF	3	C		28		
BIG3	27	1816	1819	1833	S13	E90	1.000		3.5	17	SN		C	1819	60		
BIG3	27	1856	1858	1915	S23	E42	.688		30.9	19	SB		C	1858	20	.3	
RAMY	27	1918	1922	1934	S20	E41	.667		30.9	16	SF	3	C		120		
BIG3	27	1918	1922	1939	S23	E43	.699		31.0	21	SB		C	1922	60	.8	
HOLL	27	1919	1920	1930	S24	E39	.658		30.7	11	SF	3	C		42		
HOLL	27	2039	2039	2044	S21	W17	.370		26.6	5	SF	3	C		29		
RAMY	27	2042E	2042U	20560	S14	W16	.297		26.7	14D	SF	3	C		35		
BIG3	27	2239	2246	2309	S13	E90	1.000		3.7	30	SB		C	2246	40		
BIG3	27	2246	2249	2302	S14	E37	.603		30.7	16	SN		C	2249	40	.5	
BIG3	27	2308	2318	2329	S15	E38	.618		30.8	21	SN		C	2318	50	.7	
BIG3	27	2318	2319	23590	S19	E21	.403		29.5	41D	SN		P	2319	50	.6	
BIG3	27	2328	2333	23590	S15	W17	.319		26.7	31D	SN		P	2333	50	.5	
HOLL	28	1630	1632	1654	S13	E76	.965		3.4	24	SF	3	C		0		
HOLL	28	1829	1829	1839	S14	E27	.462		30.8	10	SF	3	C		28		
PALE	28	1830	1831	1836	S15	E27	.465		30.8	6	SF	3	C		29		DE
RAMY	28	1833E	1833U	1843	S13	E26	.444		30.7	10D	SF	3	C		47		
HOLL	28	2138	2138	2152	S18	W84	.991		22.6	14	SN	3	C		23		
PALE	28	2139E	21393	2156D	S20	W86	.994		22.5	17D	SF	3	C		42		
BIG3	28	2200	2204	2209	S23	E26	.497		30.9	9	SB		C	2204	40	.5	
BIG3	28	2220	2222	2302	S23	E27	.510		31.0	42	SB		C	2222	70	.8	
MANI	29	0045E	0045U	00570	S17	W90	.999		22.3	12D	SN	3	C		0		
MANI	29	0710E	0712	07250	S17	W90	.999		22.5	15D	SN	3	C		0		
MONT	29	1044	1052	1112	S16	E18	.341		30.8	28	SN		C	1052	200		
BIG3	29	1542E	1620	16480	S14	E69	.928		3.8	66D	SB		P	1620	230		
HOLL	29	1542	1542	1549	S13	E69	.928		3.8	7	SF	3	C		16		
BIG3	29	1547	1551	1604	S24	E15	.383		30.8	17	SN		C	1551	80	.9	
HOLL	29	1550	1603	1614	S14	E69	.928		3.8	24	SF	3	C		28		
BIG3	29	1552	1555	1600	N13	W35	.642		27.0	8	SN		C	1555	30	.4	
HOLL	29	1554	1555	1605	N11	W35	.630		27.0	11	SF	3	C		31		
BIG3	29	1609	1611	1628	S15	E11	.235		30.5	19	SB		C	1611	60	.6	

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OBSERV-ATORY	OBSERVED UT				LOCATION				CMP. DAY	DURA-TION MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION				COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	29	1610	1610	1623	S14	E12	.240		30.6	13	SB	3	C		66		DE
HOLL	29	1614	1620	1651	S12	E71	.940		4.0	37	SB	3	C		116		UDE
HOLL	29	1730	1731	1740	S15	E14	.276		30.8	10	SF	3	C		29		F
RAMY	29	1747	1758	1823D	N13	W37	.665		27.0	36D	SF	3	C		30		
HOLL	29	1752	1753	1800	S13	E11	.217		30.6	8	SF	3	C		24		
RAMY	29	1754	1758	1808	S14	E11	.226		30.6	14	SN	3	C		37		
RAMY	29	1808	1818	1823D	S11	E60	.863		3.3	15D	SF	3	C		41		
BIGB	29	1837E	1840	1859	S17	W90	.999		23.0	22D	SN		P	1840	40		
BIGB	29	1853	1854	1857	S15	E09	.210		30.5	4	SN		C	1854	30	.3	
BIGB	29	1950	1953	2005	S17	W90	.999		23.1	15	SN		C	1953	30		
RAMY	29	2036	2036	2043	S11	E59	.851		3.3	7	SF	3	C		23		
BIGB	29	2105	2109	2158	S16	W45	.707		26.5	53	SN		C	2109	60	.9	
BIGB	29	2135	2136	2139	S15	E09	.210		30.6	4	SN		C	2136	30	.3	
BIGB	29	2222	2223	2225	S15	E09	.210		30.6	3	SN		C	2223	20	.2	
BIGB	29	2307	2312	2326	S14	E54	.804		3.0	19	SN		C	2312	50	.9	
BIGB	29	2332	2334	2337	S15	E09	.210		30.7	5	SN		C	2334	20	.2	
BIGB	29	2341	2342	2350	N12	E41	.705		2.1	9	SN		C	2342	90	1.2	
ATHN	30	1105E	1106U	1133	S18	E49	.755		3.1	25D	SB	3	C		48		DE
RAMY	30	1159E	1244	1255	S16	W55	.815		26.4	56D	SF	3	C		126		
RAMY	30	1544	1547	1550	S13	E49	.750		3.3	6	SF	3	C		20		
BIGB	30	1557	1601	1605	S11	E90	1.000		6.4	8	SN		C	1601	50		
BIGB	30	1609	1611	1628	N12	E90	1.000		6.4	19	SN		C	1611	60		
BIGB	30	1625	1629	1636	N11	W50	.797		26.9	11	SN		C	1629	80	1.3	
HOLL	30	1842	1844	1853	N10	W51	.803		27.0	11	SF	2	C		19		
BIGB	30	1925	1927	1938	S15	W62	.877		26.2	13	SF		C	1927	80	1.8	
BIGB	30	1930	1933	2008	N11	W50	.797		27.1	38	SB		C	1933	70	1.1	
PALE	30	1930	1932	1936	N 9	W52	.810		26.9	6	SF	3	C		21		DE
BIGB	30	1936	1937	1940	S22	E26	.491		1.8	4	SN		C	1937	20	.2	
BIGB	30	2139	2142	2208	S15	W64	.893		26.1	29	SN		C	2142	80	1.9	
BIGB	30	2206	2207	2211	S18	E90	.999		6.7	5	SN		C	2207	30		
RAMY	31	1228	1240	1315	S17	E36	.597		3.2	47	SF	3	C		28		
RAMY	31	1237	1244	1259	S16	W69	.927		26.4	22	SN	3	C		20		
RAMY	31	1349	1352	1358	S13	E39	.628		3.5	9	SF	3	C		80		
RAMY	31	1401	1401	1407	N12	W59	.879		27.2	6	SN	3	C		35		
RAMY	31	1432	1433	1438	S13	E37	.601		3.4	6	SF	3	C		28		
RAMY	31	1530	1533	1550	S13	E36	.588		3.3	20	SF	3	C		22		
RAMY	31	1603	1604	1609	N15	E75	.976		6.3	6	SF	3	C		0		
BIGB	31	1719	1721	1729	S15	W76	.965		26.0	10	SN		C	1721	60		
BIGB	31	1722	1723	1727	N11	W65	.921		26.8	5	SN		C	1723	20		
HOLL	31	1723	1723	1735	S20	E15	.338		1.8	12	SF	3	C		25		F
BIGB	31	1732	1733	1746	S21	E56	.829		4.9	14	SB		C	1733	60	1.1	
HOLL	31	1733	1733	1751	S19	E56	.827		4.9	18	SF	2	C		42		
BIGB	31	1735	1739	1807	S33	E90	.998		7.5	32	SB		C	1739	50		
BIGB	31	1908	1909	1923	S12	E54	.804		4.8	15	SN		C	1909	30	.5	

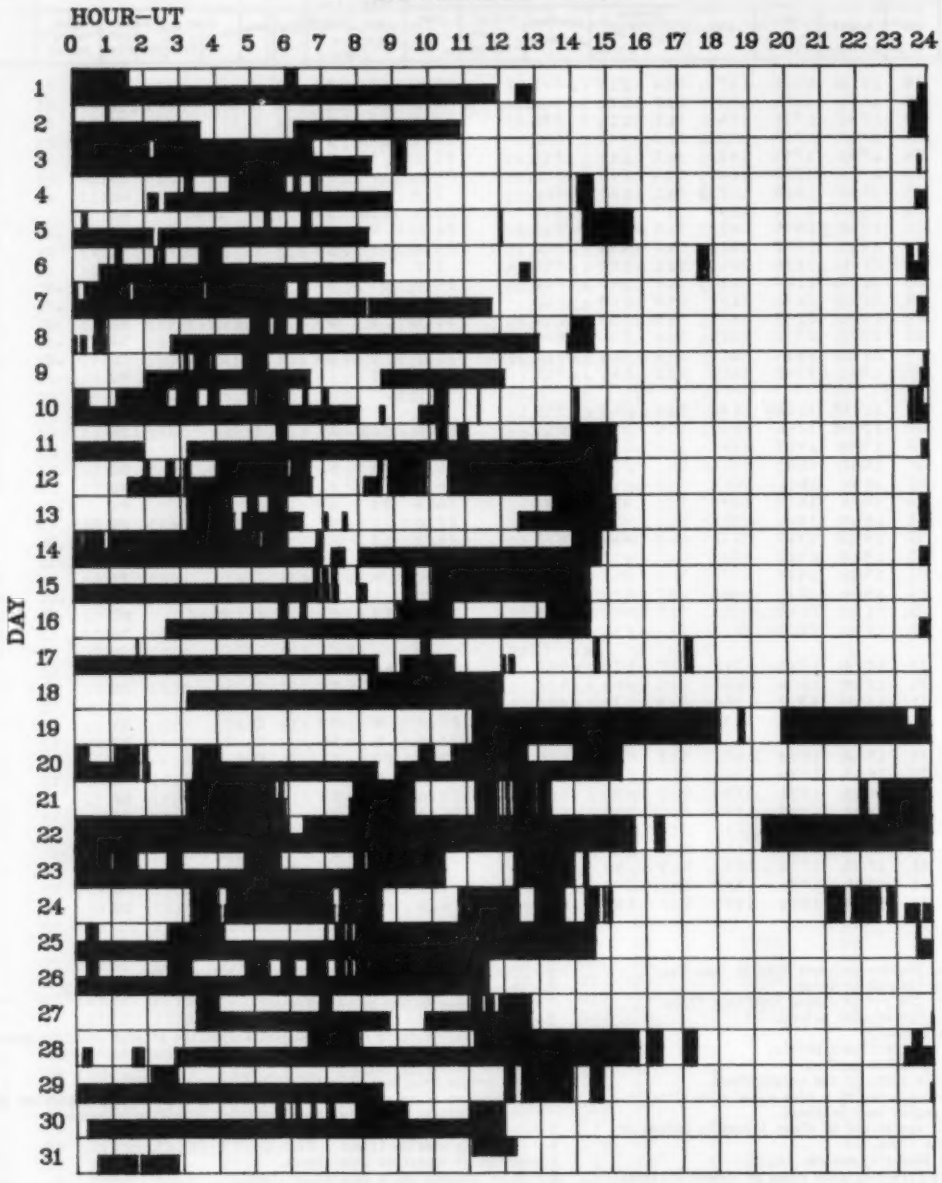
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

DECEMBER 1979



Observatories included in total patrol:

Athenes	Bucharest	Istanboul	Manila	Palehua	Upice
Big Bear	Holloman	Kodaikanal	Monte Mario	Ramey	Wendelstein

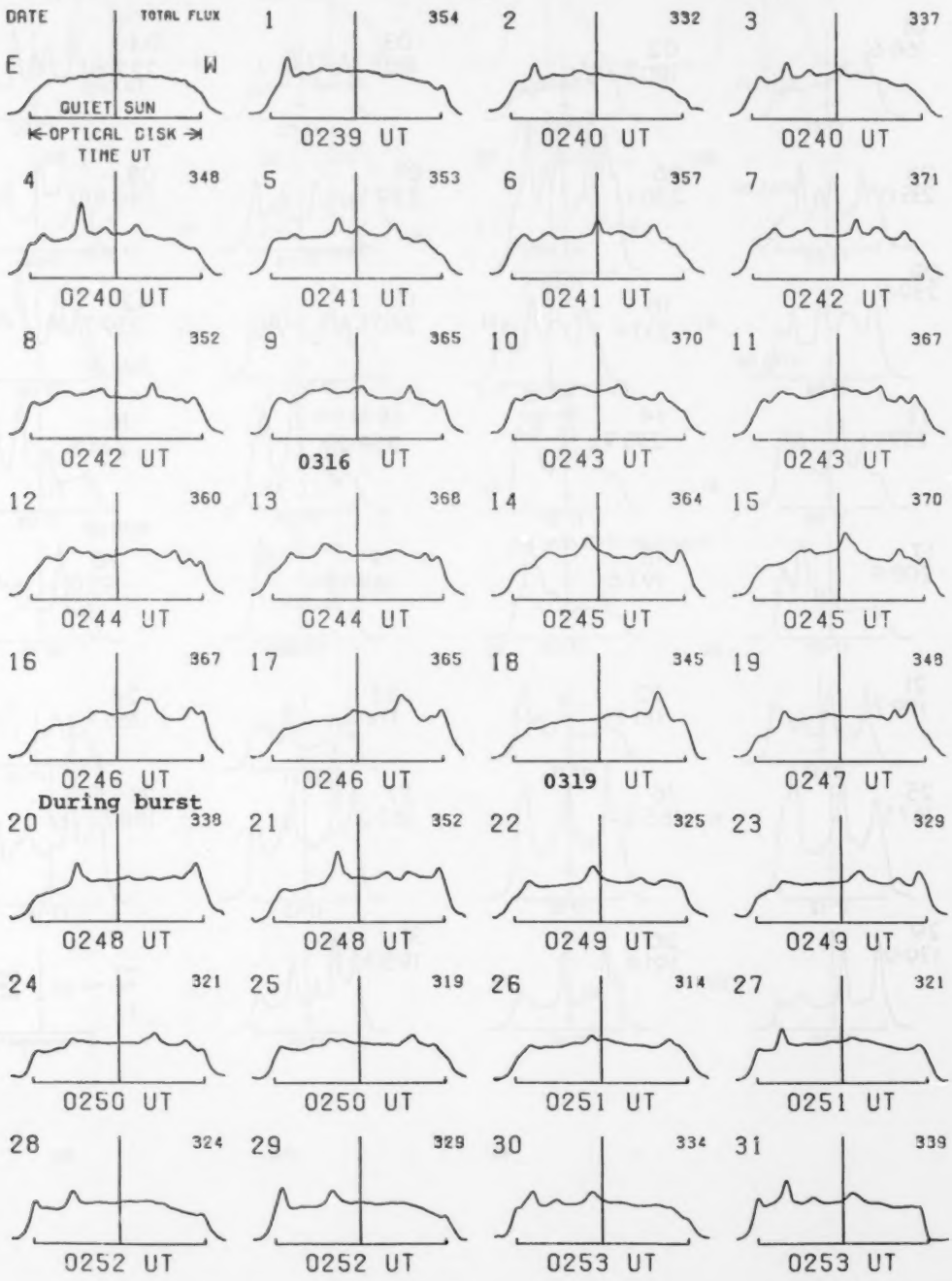
Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

EAST-WEST SOLAR SCANS

DECEMBER 1979

TOYOKAWA, JAPAN

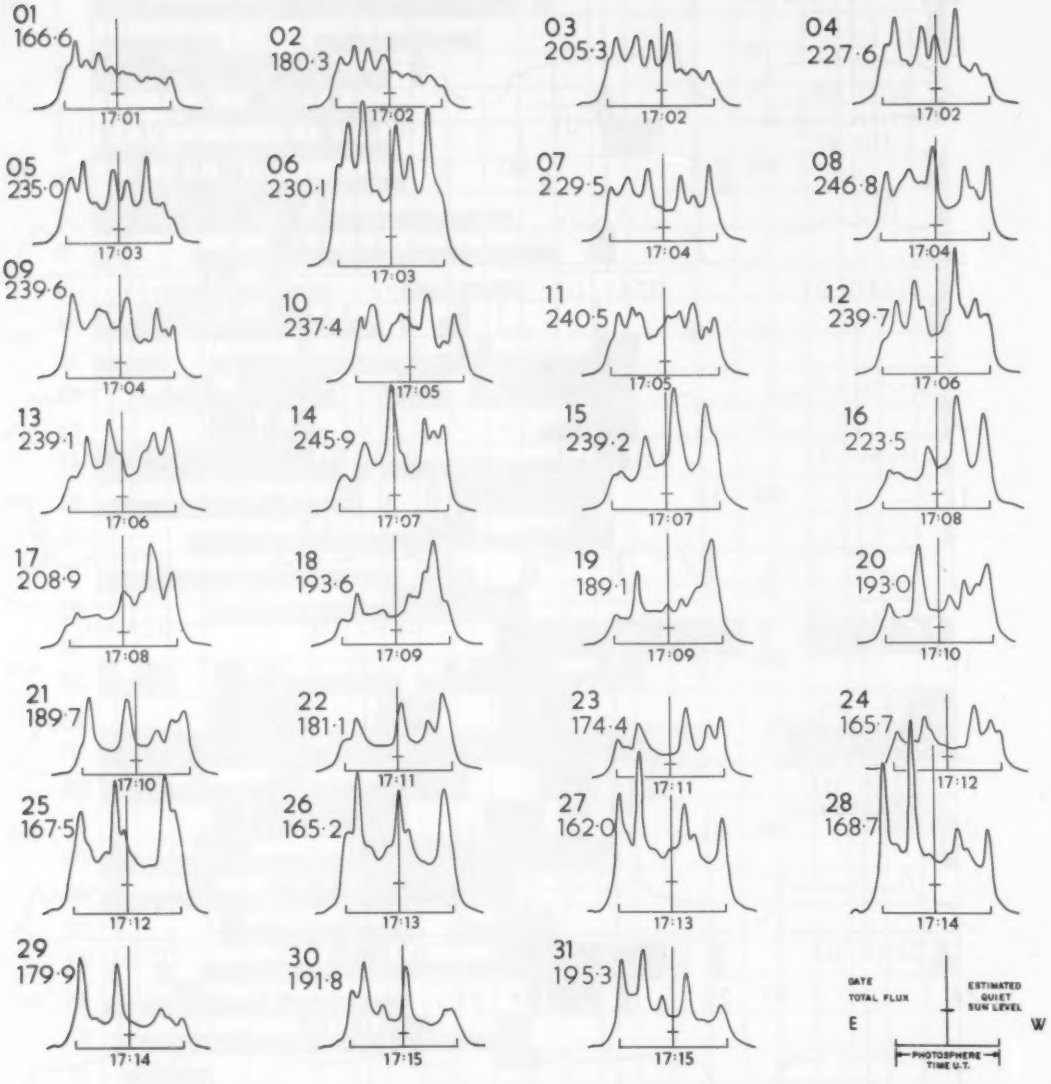
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS
DECEMBER 1979

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

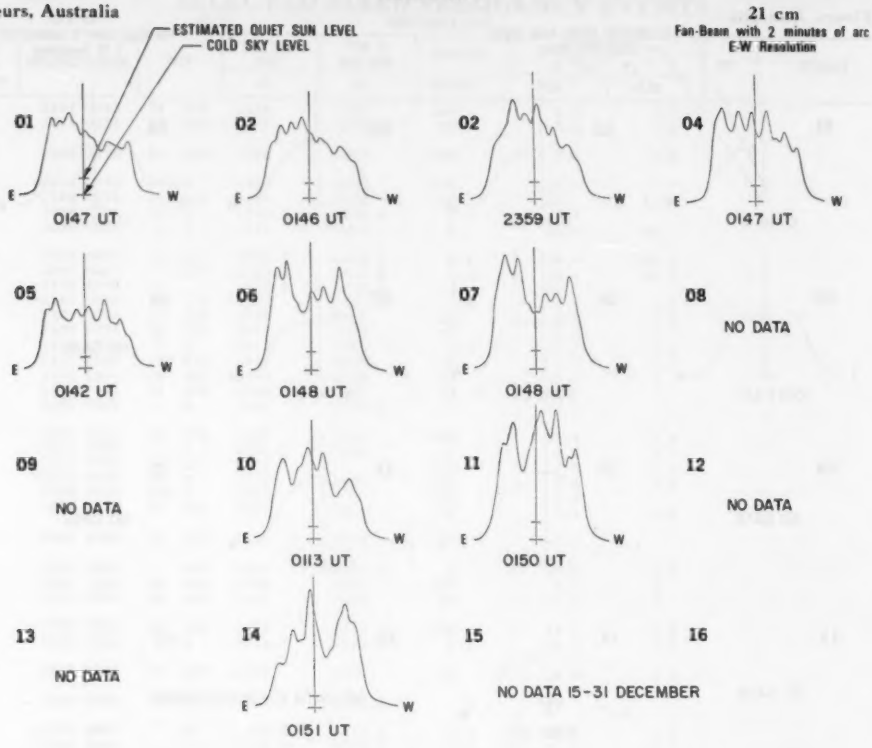


EAST-WEST SOLAR SCANS

DECEMBER 1979

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

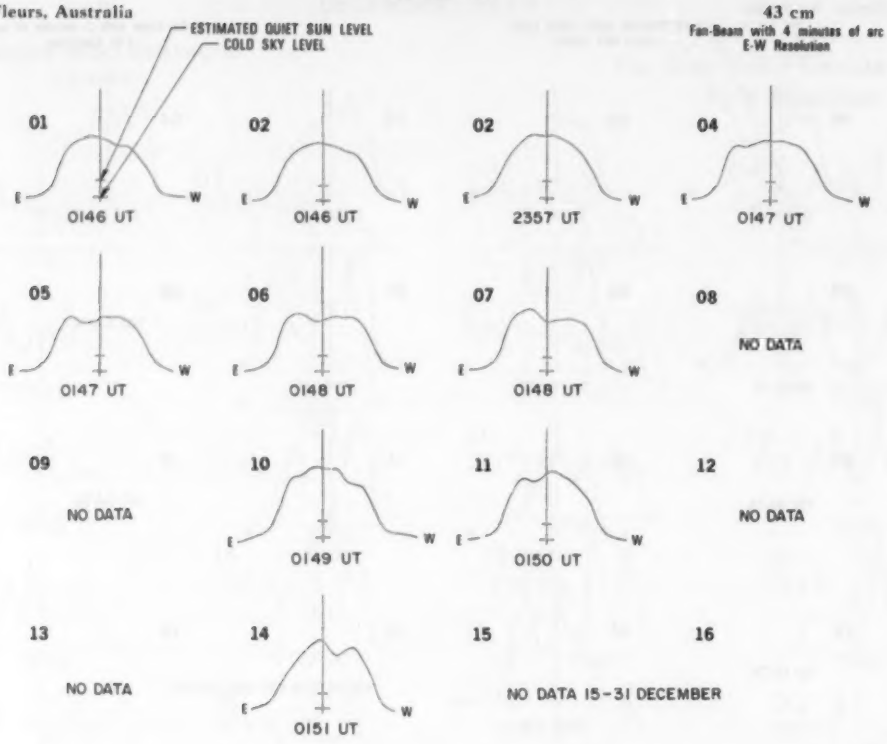


EAST-WEST SOLAR SCANS

DECEMBER 1979

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
DECEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
1	2800	OTTA	20 GRF	1510	1605	180	2 8	1.7		
	2800	OTTA	20 GRF	1700	1800	90	3.2	1.6		
2	2800	OTTA	20 GRF	1500	1715	225	5.2	2.6		
3	2800	OTTA	24OAR	1455	1835	220	10.6			
	2800	OTTA	21 GRF	1456	1520	160	23	11.5		
	2800	OTTA	40 F	1503	1504.3	1.5	7.4			
	2800	OTTA	3 S	1511	1513	6	31.6	26		
4	8800	MANI	4 GB	0222.2	0224.7	6.8	7 706.6	262.2		
	2695	MANI	S/F	0223.3	0224.8	3.2	4 32.8	10 9		
	8400	BERN	1	1322.8	1323.1	4	20			
	2800	OTTA	2 S/F	1322	1323.5	2.8	9	4.5		
	2800	OTTA	22 GRF	1738	1741	20	3	1.8		
	2800	OTTA	21 GRF	1802	1818	55	3.8	2		
	2800	OTTA	3 S	1813	1815	3.5	11.2	5.6		
	2695	PENT	26O FAL	2010	2020	10	-3 6	-1.8		
	2695	PENT	20 GRF	2105	2120	25	3.6	2		
	2695	PENT	21 GRF	2140	2200	40 D	9			
	2695	PENT	3 S	2153	2154.5	3	12.4			
5	2800	OTTA	23 GRF	1420	1602	200	11.4	6.4		
	2695	PENT	1 S	1706 5	1708	3	3.6	2		
	2800	OTTA	27P RF	1750		220	7.6	5.8		
	2800	OTTA	24 R	1750	1825	40	7.6	3.8		
	2800	OTTA	24P R	1825		120	7.6			
	2800	OTTA	26 FAL	2025	2125	60	-7.6	-3.8		
6	2800	OTTA	20 GRF	1715 E	1724	45 D	7.6			
7	2695	MANI	S/F	0152	0152.9	2	4 24.8	8.3		
	2800	OTTA	20 GRF	1420	1445	180	8.6	4		
	2800	OTTA	20 GRF	1910	1945	80	3.2	2		
8	2800	OTTA	22 GRF	1340	1650	285	12.2	8.2		
	2800	OTTA	1 S	1922.5	1922 9	1.5	3.8	1.8		
9	2800	OTTA	22 GRF	1630	1638	50	6 8	2.3		
10	2800	OTTA	8 S	1603	1603.2	.4	205			
11	2695	MANI	S	0333.8	0334.5	2.2	3 10.8	3.6		
	8800	MANI	S/F	0333.8	0334.3	1.2	4 33.6	11.2		III
	2800	OTTA	21 GRF	1338		152	10	8		
	2800	OTTA	2 S/F	1356 4	1357.6	1.6	8.4	4 2		
	2800	OTTA	2 S/F	1431.5	1432.2	1.5	3.2			
	2800	OTTA	1 S	1530.9	1531	1	3.6	1.6		
	2800	OTTA	20 GRF	1615	1725	95	4	2		
	2800	OTTA	8 S	1812.3	1812.3	.1	7.8			
12	2800	OTTA	20 GRF	1614	1617	25	2 6	1.3		
	2695	PENT	4 S/F	1704.5	1706.5	5	21 4	7		
	2800	OTTA	3 S	1714	1714.9	4	99	17		
	2800	OTTA	21 GRF	1900	1915	60	3.2	2.4		
	2800	OTTA	8 S	1938.5	1938 7	.5	2 6	1.3		
13	2800	OTTA	3 S	1350.2	1351	3	119	30		
	8400	BERN	4	1350.3	1351.9	8	120			OPR
	2695	PENT	21 GRF	2057	2115	35	4	2.4		
	2695	PENT	1 S	2100	2101.6	3	6.6	3 3		
14	8800	MANI	S	0201 5	0201.8	1.1	3 21 5	7 2		
	2695	MANI	S	0201.6	0202	.9	1 5	1 7		
	8800	MANI	S/F	0406.1	0407.3	5.9	4 145.3	48.4		III
	2695	MANI	S/F	0406.5	0410 3	8.5	4 62 3	20.7		
	2695	MANI	S/F	0612.3	0613.6	3 5	4 107 1	35.7		
	8800	MANI	S/F	0612.9	0613.7	1.7	4 150.6	50.2		III
	8400	BERN	4	1056.2	1057.1	6	140			OPR
	2800	OTTA	4 S/F	1532	1533 5	3	15	7		
	2800	OTTA	29 PDI	1535	1535	10	4.6	2.3		
	2800	OTTA	21 GRF	1552	1558	18	3.8	2		
	2800	OTTA	1 S	1557	1557.3	1	6.2	3.1		
	2800	OTTA	1 S	1657	1658	2	2.4	1.2		
	2800	OTTA	45 C	1759.5	1800.7	10.5	18.5	4.9		
	2800	OTTA	29 PDI	1810	1810	40	6.2	1.6		
	2695	PENT	1 S	2057	2058.2	3	4.6	2		
15	2800	OTTA	8 S	1701	1701.3	.8	3	1.5		
16	2695	MANI	S	0628.3	0628.8	2.2	3 16.1	5.3		
	2695	MANI	S/F	0652.1	0653.1	5.9	4 43.7	14.5		
	8800	MANI	S/F	0652.2	0653.2	2.9	4 54.9	18.3		
	2800	OTTA	1 S	1400	1401	3	7.6	2.6		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
DECEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	2800	OTTA	21 GRF	1540	1618	70	5.6	2		
	2800	OTTA	3 S	1614 8	1615.7	2.7	19	6.4		
	2800	OTTA	1 S	1848.5	1849	1	2	1		
17	2800	OTTA	20 GRF	1530	1545	55	3	2.2		
18	2800	OTTA	46F C	1902	1903.2	10	106	19		
	2800	OTTA	29 PBI	1912	1912	13	3 8	2.8		
19	2800	OTTA	21 GRF	1430	1513	80	3.8	2 9		
	2800	OTTA	4 S/F	1520	1524.2	7	40	14.6		
	2800	OTTA	21 GRF	1710	1727	60	3.8	2		
	2800	OTTA	1 S	1745.8	1746	2	1.6			
	2800	OTTA	21 GRF	1840	1930	112	7	3.5		
	2800	OTTA	4 S/F	1851	1854	7	15.6	6		
	2800	OTTA	3 S	1910.5	1911.8	9	17	6		
	2695	PENT	21 GRF	2203	2225	25 D	8			
	2695	PENT	45 C	2204.5	2205.2	2.5	15.2	5.7		
	2695	PENT	47 GB	2209.5	2213	10	970	244		
20	8800	MANI	S	0012.9	0014.5	3.4	3 13.6	4.5		
	2695	MANI	S	0012.9	0014.2	2.8	3 23.2	7 7		
	2695	MANI	S/F	0613.3	0616.9	9.4	4 184.1	61.4		
	8800	MANI	4 GB	0614.2	0616.9	8	7 881	293.7		
	2800	OTTA	21 GRF	1440	1508.5	57	6.2	2.2		
	2800	OTTA	1 S	1504.5	1506	3	6.2	3.2		
	2800	OTTA	23 GRF	1540	1630	160	9.2	4.6		
	2800	OTTA	1 S	1605.8	1606.2	1	2	1		
	2800	OTTA	3 S	1856	1856.2	2	10.8	2.6		
	2800	OTTA	2 S/F	1945.6	1946	2 5	7	3		
	2800	OTTA	4 S/F	2025	2027	6	13.6	3.5		
21	2800	OTTA	21 GRF	1440	1605	320	10.8	6		
	2800	OTTA	1 S	1532	1533.2	2	2.6			
	2800	OTTA		1703	1704	1 D	2.8			
	2800	OTTA	20 GRF	1725	1735	20	2.8	1.4		
	2695	PENT	8 S	2003.7	2003.9	.6	35			
	2695	PENT	20 GRF	2035	2055	60	3.4	2		
22	2695	MANI	S/F	0517.1	0517 3	2 5	4 17.7	5.9		
	2800	OTTA	20 GRF	1740	1810	80	4.4	1.6		
23	2800	OTTA	1 S	1848	1849.2	3.5	7 4	2.5		
	2695	PENT	20 GRF	2000	2045	100	3.6	2.4		
24	2800	OTTA	24OAR	1740	1825	45	3.6	1.8		
	2800	OTTA	1 S	1747.5	1749	6	5.4	2		
	2800	OTTA	23 GRF	1920	2020	100 D	12.4			
	2800	OTTA	1 S	1947.5	1948.5	2.5	2.6	1.3		
25	2695	MANI	S/F	0657	0713.7	31	4 145.4	48.5		
	8800	MANI	S/F	0657.7	0712.3	30 1	4 118	39.3		
	2800	OTTA	8 S	1544	1544	.7	11.4			
	2695	PENT	1 S	2158.9	2159.2	2	9	3		
26	2800	OTTA	3 S	1512	1513	3	22	5.6		
	2800	OTTA	1 S	1837	1838	3	2.6	1.3		
27	2800	OTTA	21 GRF	1530	1610	170	4.6	3.2		
	2800	OTTA	1 S	1601.5	1602.2	1	2 2	1.1		
	2800	OTTA	3 S	1855	1855.3	1	21.8	10.9		
	2800	OTTA	20 GRF	1910	1919.5	22	3.8	1.4		
28	2800	OTTA	23 GRF	1425	1427	45	3	1.5		
	2800	OTTA	1 S	1429.8	1430	2	3.6	1.8		
	2800	OTTA	24O R	1600	1623	23	4.2	2		
	2800	OTTA	22 GRF	1805	1830	40	2.4	1 2		
	2800	OTTA	1 S	1907	1908	3	2.6	1.3		
	2800	OTTA	1 S	1913	1914	4.5	1.8	.9		
	2695	PENT	20 GRF	2120	2127	15	2.8	1.2		
	2695	PENT	3 S	2137	2138.7	3	12.4	7		
29	2695	MANI	S/F	0208.6	0209.9	3.3	4 170.8	56.9		
	8800	MANI	S	0209.5	0210	1.5	3 27.7	9.2		
	2695	MANI	S	0458.9	0501.3	5.1	3 31.6	10.5		
	8800	MANI	S	0458.9	0501.3	5.5	3 79.1	26.4		
	2695	MANI	S/F	0707.3	0709.6	5.5	4 31.6	10.5		
	2800	OTTA	24O R	1538	1543	5	4.6	2		
	2800	OTTA	21 GRF	1600	1622	60	4.2	1.4		
	2800	OTTA	1 S	1619	1620.2	3	6.2	2		
	2800	OTTA	2 S/F	1830.5	1832	4	7.2	2.6		
30	2800	OTTA	22 GRF	1850	1930	75	3	1.5		
31	2695	PENT	8 S	2044	2044.1	.5	3.2	1.6		

Observatories:

BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

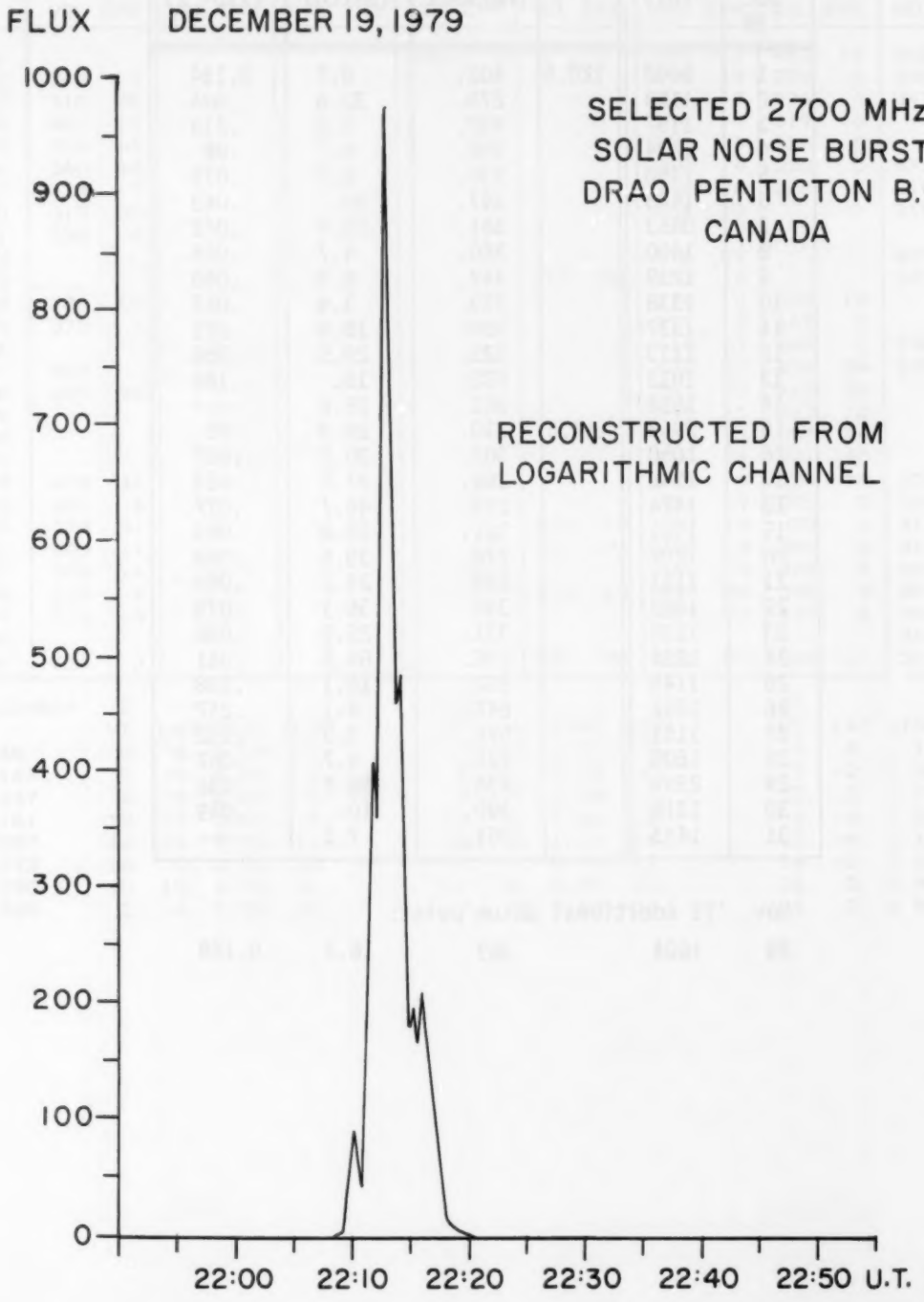
Explanation of Type Code:

1 Simple 1	6 Minor	22 Simple 3F	27 Rise and Fall	32 Absorption	44 Noise Storm in Progress
2 Simple 1F	7 Minor +	23 Simple 3AF	28 Precursor	40 Fluctuation	45 Complex
3 Simple 2	8 Spike	24 Rise	29 Post Burst Increase	41 Group of Bursts	46 Complex F
4 Simple 2F	20 Simple 3	25 Rise A	30 Post Burst Increase A	42 Series of Bursts	47 Great Burst
5 Simple	21 Simple 3A	26 Fall	31 Post Burst Decrease	43 Onset of Noise Storm	48 Major
					49 Major +

NOTE: U.S. Air Weather Service RSTN data still not available at this time. Some computer problems are still being worked on at NGSDC. Because the problems are relatively minor, we are hopeful that they will be solved shortly. We ask for your patience in the interim.

SELECTED SOLAR NOISE BURSTS

DECEMBER 1979



PIONEER XII

DECEMBER 1979

DATE Dec '79	TIME (UT)	ESV (°)	U_{H^+} (Km/sec)	N_{H+} (H+/CC)	T_{H+} (x10^6°K)
1	1003	120.5	402.	9.7	0.134
2	1158		278.	32.6	.034
3	1157		492.	2.8	.218
4	1234		386.	4.7	.06
5	1450		335.	8.5	.079
6	1403		347.	20.	.063
7	0853		361.	20.8	.042
8	1400		360.	4.7	.044
9	1239		342.	6.9	.068
10	1338		328.	3.9	.053
11	1337		309.	18.6	.021
12	1113		323.	29.5	.068
13	1013		422.	16.	.144
14	1558		301.	26.6	----
15	0952	112.6	310.	26.9	.05
16	1050		302.	30.2	.087
17	1248		289.	27.4	.021
18	1424		293.	46.7	.072
19	1051		321.	28.8	.069
20	1202		278.	39.6	.068
21	1151		298.	24.1	.049
22	1403		333.	36.1	.079
23	1539		331.	25.9	.088
24	1224		296.	69.8	.061
25	1149		552.	15.1	.338
26	1552		645.	4.1	.212
27	1151		575.	3.9	.132
28	1608		425.	6.7	.052
29	2359		438.	56.5	.036
30	1318		390.	10.	.049
31	1433		351.	7.3	----

Nov. '79 additional datum point:

29	1604		369.	18.2	0.169

SOLAR WIND

Interplanetary Scintillations

DECEMBER 1979

DAY	3C48 VEL	3C48 ERR	3C144 VEL	3C144 ERR	3C147 VEL	3C147 ERR	3C161 VEL	3C161 ERR	3C237 VEL	3C237 ERR	3C273 VEL	3C273 ERR	3C298 VEL	3C298 ERR	3C459 VEL	3C459 ERR
1							395	5			440	15	460	14	362	38
2	363	5									390	19	372	6	308	3
3	310	28									381	4	376	4	343	17
4	401	11									354	4	319	6		
5	311	61									331	4	356	5		
6	360	64									330	4	352	5	471	126
7	434	19									332	4	288	4	217	5
10	313	30									404	15			310	60
11	338	4														
12											416	29			245	3
13									205	33	383	12			347	35
14	289	40									374	8	320	15		
15	375	7									397	2	445	3		
16											414	59	363	1	538	45
17	407										427	37	439	54	279	8
18	239	36									381	42	415	25		
19											395	15	367	12		
20											344	6	397	34		
21											454	74	451	40		
22	278	44									386	4	350	18	355	
23	381	5									337	9	295	3	339	90
25	374	51							373	95	307	4	323	6	410	4
26	383	11							507	126	345	4	328	8	318	19
27	350	14									361	4	374	4	444	4
28	252	6							316	65	354	20	392	5	349	62
29	275	10									489	22	439	6	351	16
30															369	5
31	366	3							450	90	310	31	380	21	310	20

DECEMBER	5 UT	LAT	DIST	DLON	15 UT	LAT	DIST	DLON	25 UT	LAT	DIST	DLON
3C48	5.	6.	1.24	-7.	4.	5.	1.21	-9.	4.	4.	1.17	-11.
3C144	9.	0.	1.30	2.	8.	-1.	1.30	-0.	7.	-2.	1.30	-2.
3C147	8.	5.	1.27	4.	7.	4.	1.28	1.	7.	3.	1.27	-1.
3C161	10.	-7.	1.25	4.	10.	-7.	1.26	2.	9.	-8.	1.27	-0.
3C237	14.	-2.	1.10	15.	13.	-3.	1.15	14.	12.	-4.	1.19	12.
3C273	16.	0.	0.93	22.	15.	-1.	0.98	17.	14.	-2.	1.03	17.
3C298	18.	13.	0.73	41.	17.	8.	0.83	33.	16.	3.	0.91	24.
3C459	2.	4.	1.08	-15.	2.	3.	1.03	-16.	1.	2.	0.98	-17.

INFERRED IP MAGNETIC FIELD

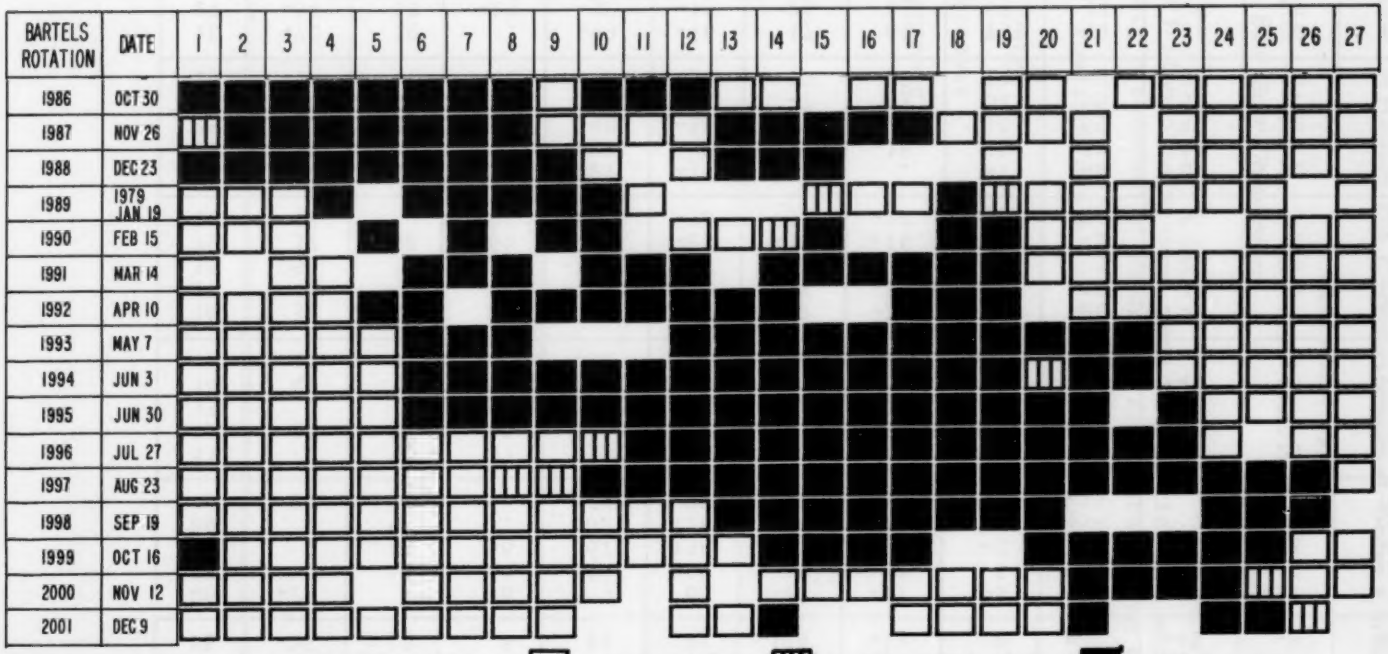
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1984	SEP 11			TA		AT				TA	T*						A*		—				—			A*	TA –	
1985	OCT 8	*	TA		T*		AT				—	—	—						TA	TA –		AT		—				
1986	NOV 4		–				–	AT –	–		–	–						*	AT	–		AT	AT	AT	AT			
1987	DEC 1	AT	AT	–					–		–	TA	–	–	AT –	–	AT –	TA –	–	A*	–		*		–	AT –	–	
1988	DEC 28		–	–	–	–			–	AT *			TA	TA T*		–	AT –	–	TA			–	TA –			–	TA	–
1989	1979 JAN 24		–			*		TA			TA		TA							*					–		AT	
1990	FEB 20		TA	–	TA –		TA			–	TA –	TA	TA			TA A*		TA A*		TA A*				A*				
1991	MAR 19		AT			AT		T*						*	–	–	–	–	TA –		AT	T*	TA	TA –	A*	–		TA A*
1992	APR 15		A*	TA T*	AT			TA TA			T*						TA	*	–	–	AT –	TA			A*		–	TA
1993	MAY 12									–	–		AT			*		TA			AT AT					– –		– –
1994	JUN 8	TA	TA A*		TA						–	AT		–					T*	–	TA		TA T*			AT T*	–	TA
1995	JUL 5	TA	TA	AT		TA		AT A*	TA		TA –			TA		AT				*				TA T*				TA
1996	AUG 1			AT	A*	–			TA –	–	–		T*				*	–			AT					AT *		
1997	AUG 28			–	A*						AT							–		–		T*	–	AT	TA –		TA AT	
1998	SEP 24						A*		AT	–		TA		A*	*			TA		–			TA			TA	TA –	*
1999	OCT 21								T*			TA	–		–					AT	AT *		AT					
2000	NOV 17	–	TA –			AT					*				AT				AT –	TA	–		TA		–	–		
2001	DEC 14				–				TA		TA	–	–	AT –				AT										

▒ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1979

DAY	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
01	11	.	-36	-4	26	41	97	24	-5	-32	-6	16
02	.	-1	.	16	13	82	86	21	-8	-27	.	-3
03	15	30	.	57	6	137	70	6	-36	-27	.	-24
04	-6	27	-24	44	10	115	35	4	-28	-36	-5	-18
05	-25	-13	-6	11	45	104	-33	2	-20	-45	-8	-6
06	-26	1	46	9	68	78	-61	-6	-24	-31	-17	-1
07	.	50	64	14	101	15	-81	-8	-39	-22	-12	18
08	.	88	56	67	134	-27	-80	-8	-46	-45	-3	35
09	.	59	.	102	126	-50	-70	-6	-54	.	-6	75
10	27	39	.	124	75	-76	-68	-16	-45	.	6	99
11	.	40	21	138	31	-82	-75	-43	-47	.	29	83
12	27	30	63	100	-13	-52	-23	-59	-67	-55	46	60
13	.	.	100	51	-66	-52	-23	-46	-74	-62	52	32
14	45	78	106	-12	-104	-37	-20	-33	-53	-49	45	44
15	21	62	.	-51	.	-28	-24	-38	-41	.	26	29
16	36	27	24	.	.	-42	-30	-61	-26	-6	.	20
17	48	6	45	-121	.	-43	-26	-57	-18	20	13	18
18	59	.	.	-117	-27	-35	-32	-41	3	29	41	.
19	37	-52	-56	-72	-29	-32	-16	4	15	25	35	.
20	18	.	-81	-40	-36	-37	-10	.	41	52	35	7
21	9	-86	-81	-27	-34	-24	.	41	46	64	30	6
22	-15	.	.	-32	-43	0	-16	55	64	69	.	-6
23	.	-80	-51	-40	-56	-7	6	58	59	48	22	.
24	-54	-52	-41	.	-51	-7	33	68	65	50	.	.
25	-64	.	-28	.	-30	10	58	74	63	35	12	35
26	-70	19	.	-99	-16	17	69	77	40	26	20	40
27	-64	10	-29	-92	-17	29	83	47	37	16	27	27
28	-27	0	-36	-57	-4	47	92	40	24	3	24	23
29	12		-12	.	19	64	90	32	21	-9	39	-18
30	.		-26	3	10	93	82	1	7	-7	37	.
31	.		-28		9		53	-1		-22		.

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

DECEMBER 1979

Big Bear Solar Observatory

Only three D3 limb observations were made during the month of December. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North	South
6 December	-3 to -11	
8 December		174 to 170

BOULDER GEOMAGNETIC SUBSTORM LOG

DECEMBER 1979

DATE	ONSET TIME	DIRECTION	COMMENTS
12/01	0630		Gradual onset to active field conditions that lasted through 1830 UT. No distinctive SS activity.
12/02			Field unsettled 0245-1445 UT.
	0910		Localized SS, Arctic Village to College.
12/03			Field unsettled 0400-1100 UT.
	0815	West	Weak SS
	0915	West	Weak SS
12/04			Field active 0300-1900 UT; numerous particle injections; no distinctive SS activity.
12/05	0820		Localized SS, Ft. Smith to Ft. Simpson.
	1335	West	
12/06	0730		Weak SS
12/07			Quiet day
12/08	1155	West	Weak SS
	1300	West	Slow onset, weak SS.
12/09	0850		Weak SS
	1300	West	Slow onset, weak SS.
12/10	1450		Weak SS
12/11			Quiet day
12/12			Quiet day
12/13	1210		Weak SS
12/14			Quiet day
12/15	0420	East	
	0825	West	Weak SS
	0905	West	Several particle injections with recovery near 1050 UT.
12/16			Field unsettled 0400-1700 UT; no distinctive SS activity.
12/17	0730	East	
	0815	≈ center	Weak SS
	1235	West	Weak SS
	1340	West	Weak SS
	1620	West	Weak SS; slow expansion northward through Alaska chain.
12/18	0935	West	Field remained unsettled through 1500 UT.
12/19			Field slightly unsettled 0400-1700 UT. No distinctive SS activity.
12/20	1430	West	Field slightly unsettled 0500-1600 UT.
12/21			Field slightly unsettled after 0800 UT. No distinctive SS activity.
12/22	0410	East	Weak SS
	0920	West	Slow onset with strong injection at 0955 UT.
	1430		Weak SS
	1850		Slow onset; moderate SS with several particle injections.
12/23			Quiet day
12/24	0555	East	Weak SS
	1050	West	Field remained unsettled through 1730 UT.
12/25			Quiet day
12/26	1220	West	Field unsettled after 1600 UT.
12/27	0428		Small positive impulse on H component at all mid- and low-latitude stations. Field active through 1700 UT.
	0730	≈ center	
	1105	West	
	1450	West	Several particle injections; recovery near 1700 UT.
12/28	1040	West	
	1130	West	Strong SS with recovery near 1400 UT. Field remained unsettled through 1730 UT.
12/19	0300		Gradual onset to magstorm; lasted through 2000 UT.
	0335	East	Sharp onset of moderate SS.
	0925	West	Strong SS
	1300		Onset to level of continuous injections; final recovery near 2000 UT.
12/30			Field active through 1900 UT. SS activity localized and sporadic throughout network.
12/31			Field slightly unsettled. No distinctive SS activity.

SGD 425 Part I (Prompt)

NOVEMBER 1979 DATA

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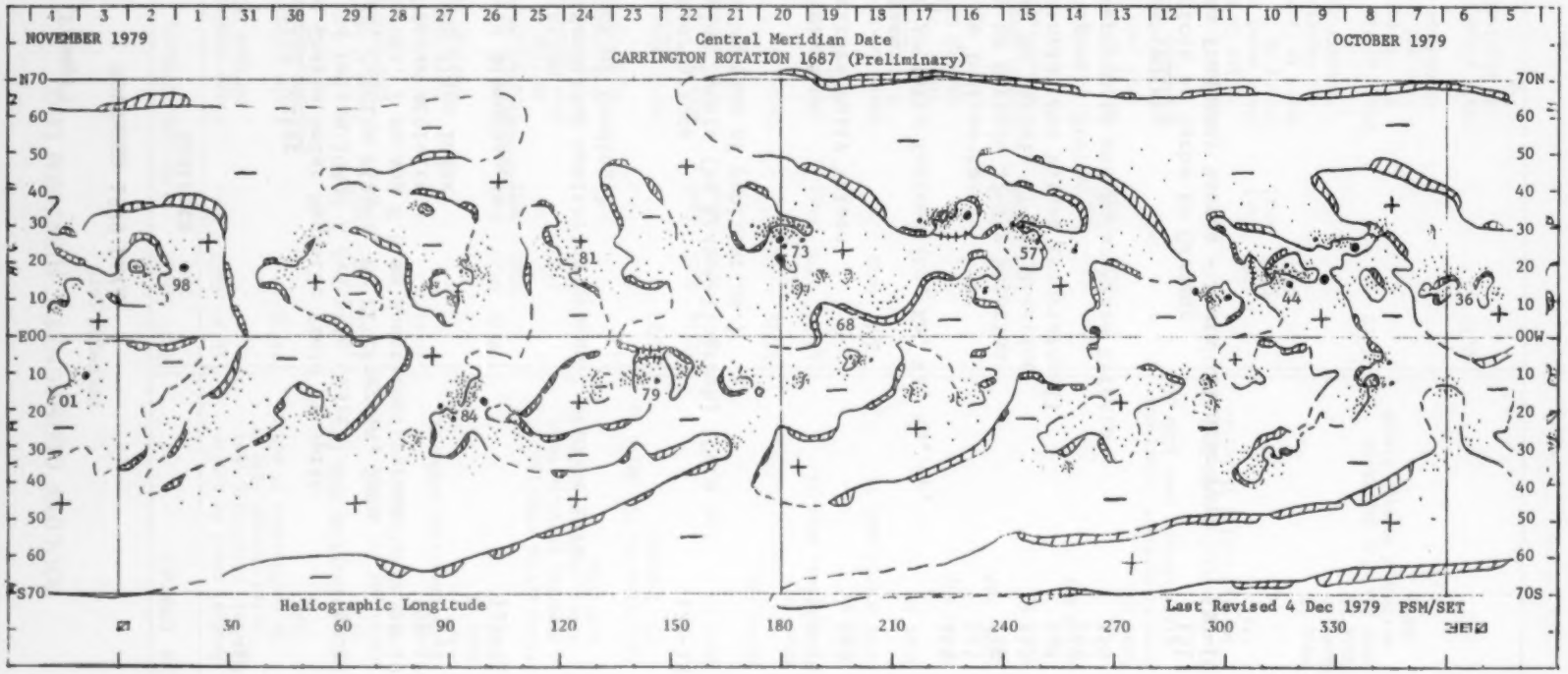
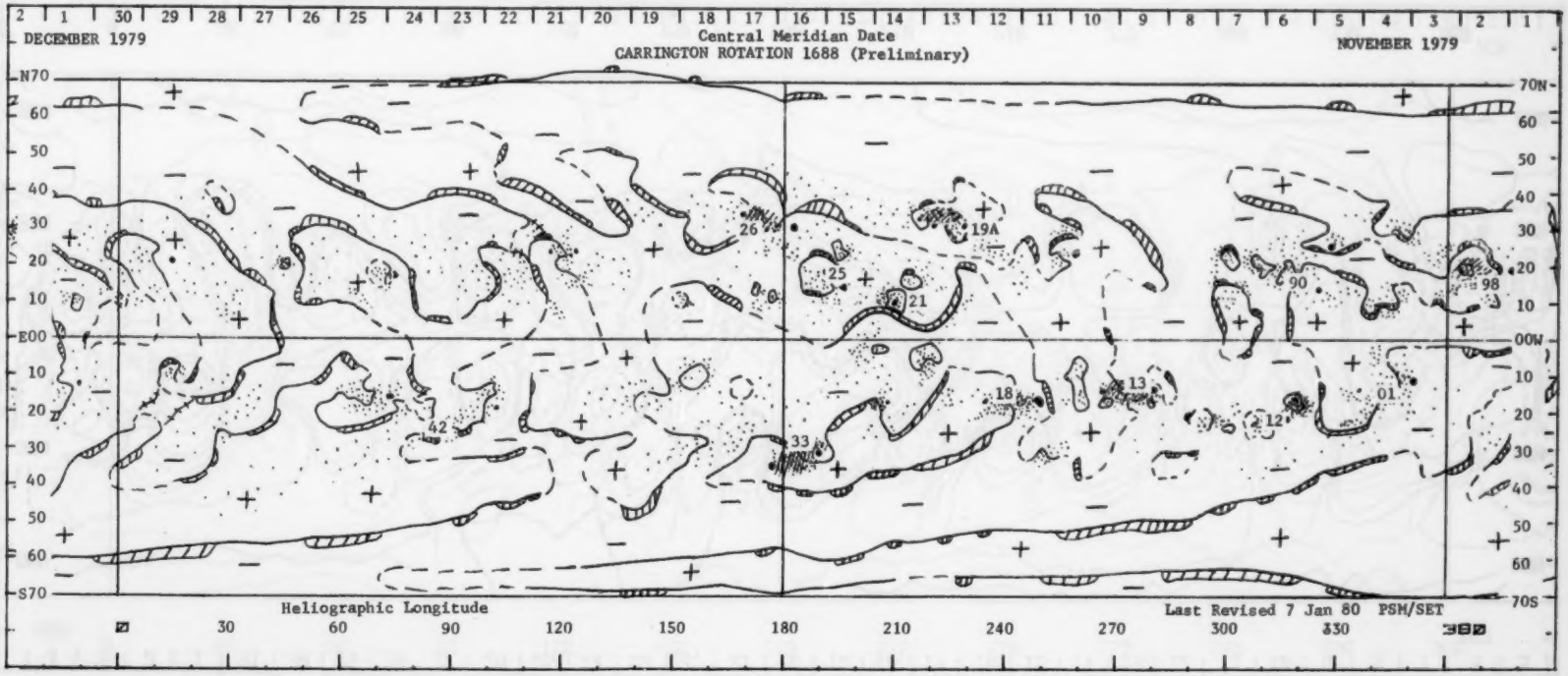
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1687 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1688 (PRELIMINARY)

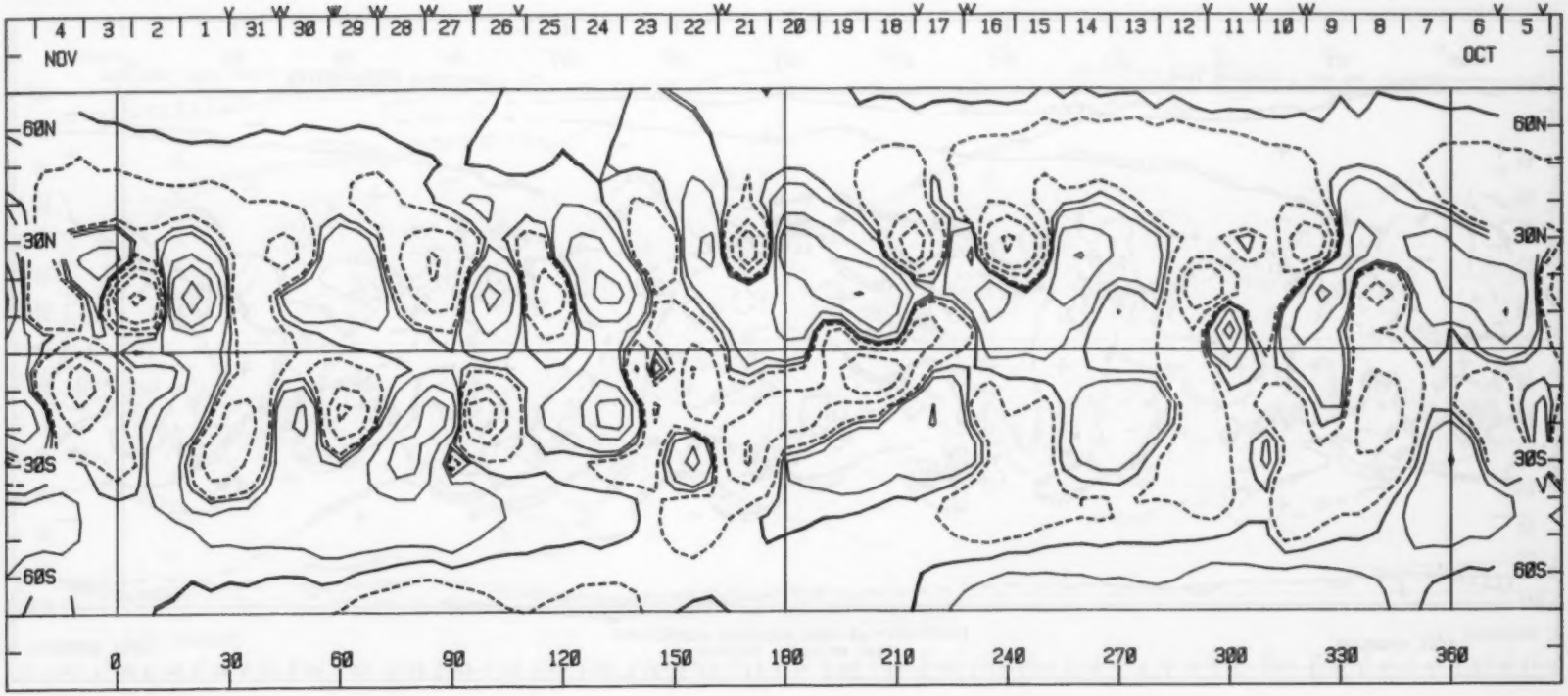


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1687

Stanford Solar Observatory

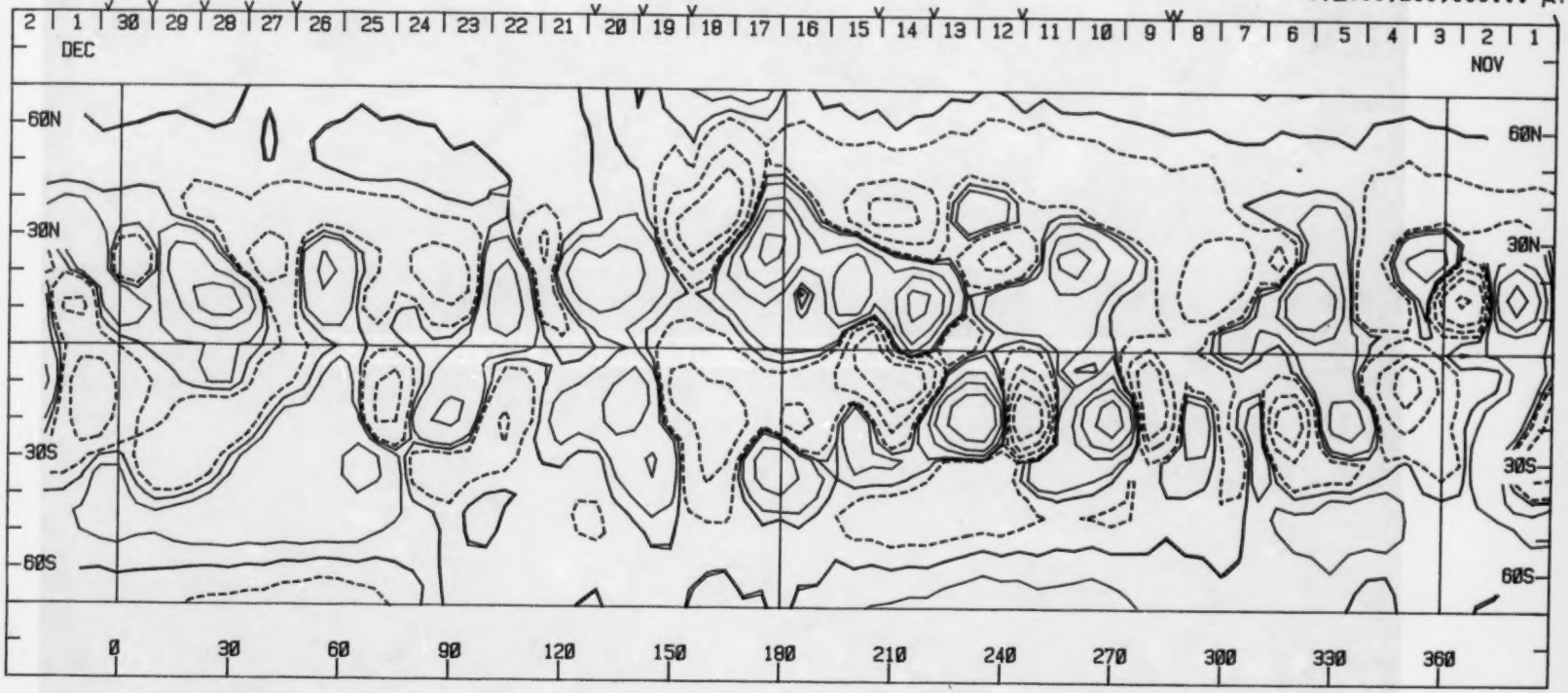
0.,±100.,200.,500... μT

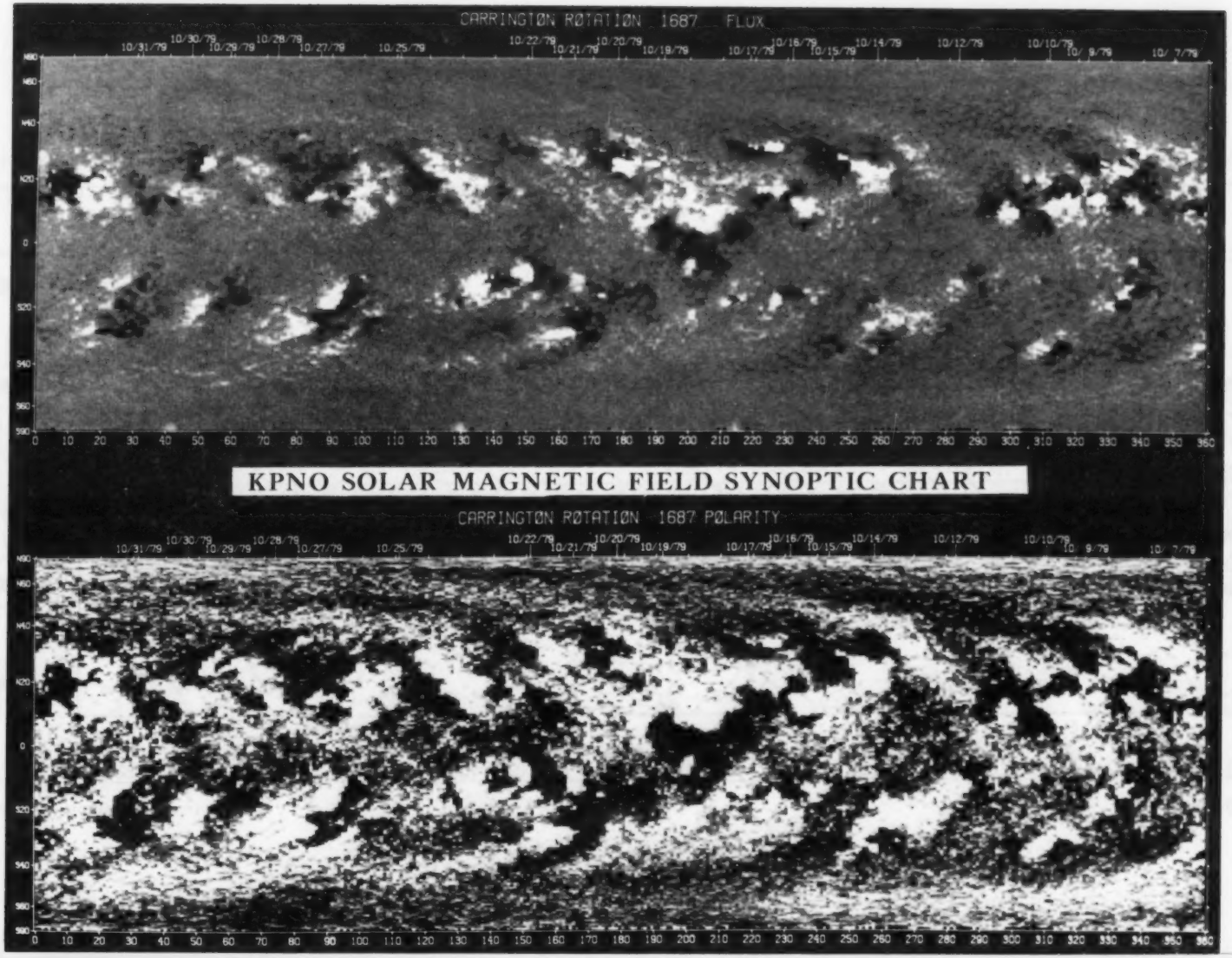


SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1688

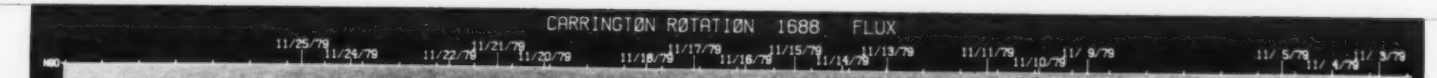
Stanford Solar Observatory

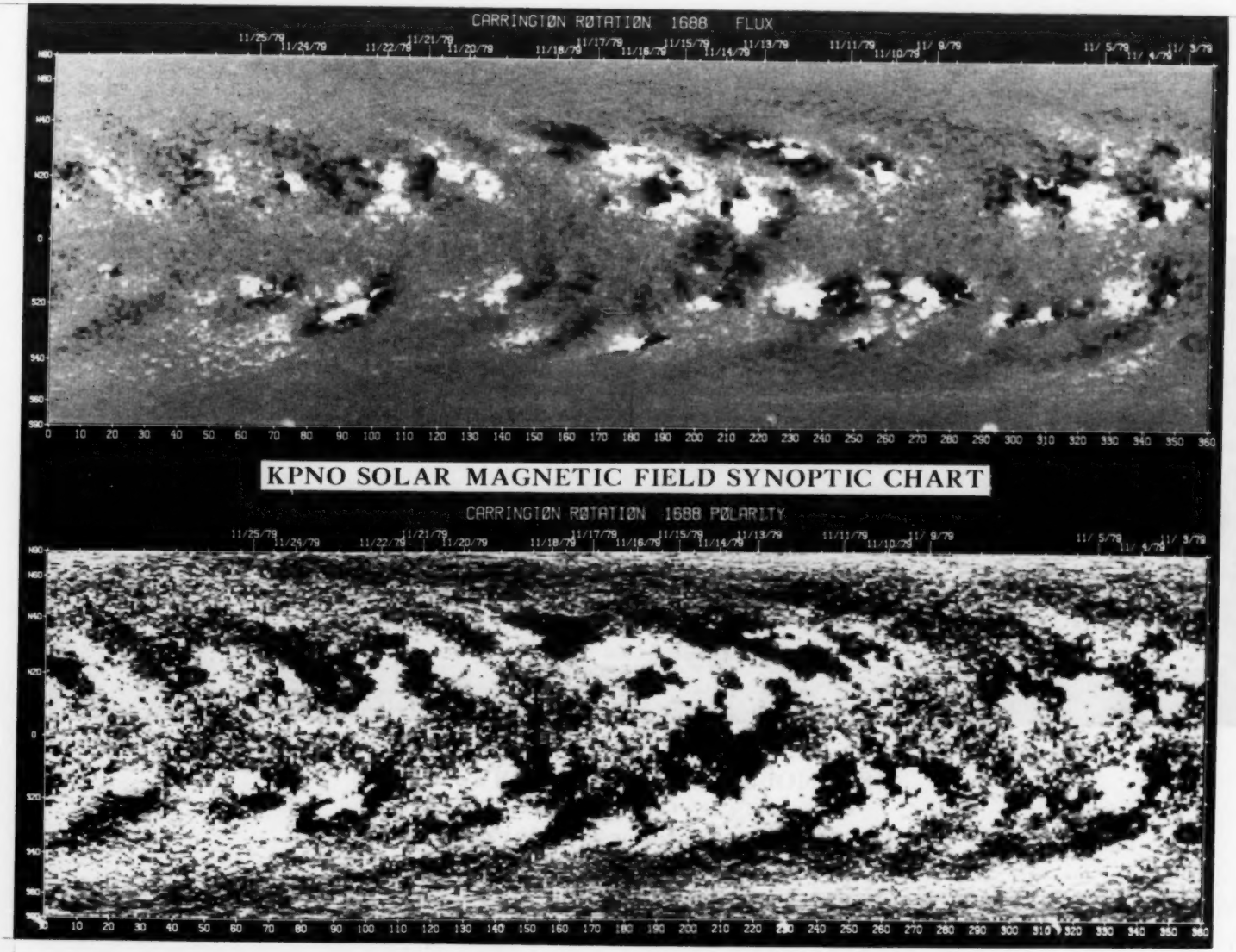
0,±100,200,500... μT





KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

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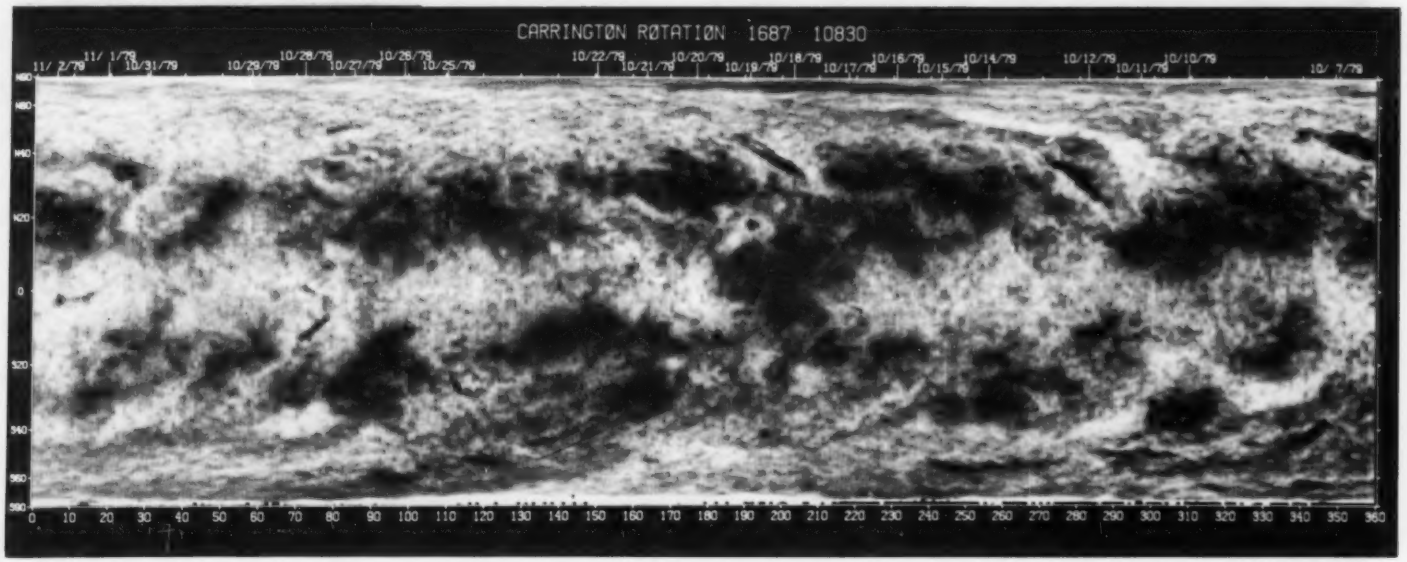
CARRINGTØN RØTATIØN 1688 PØLARITY

HELIUM 10830Å SYNOPTIC MAPS

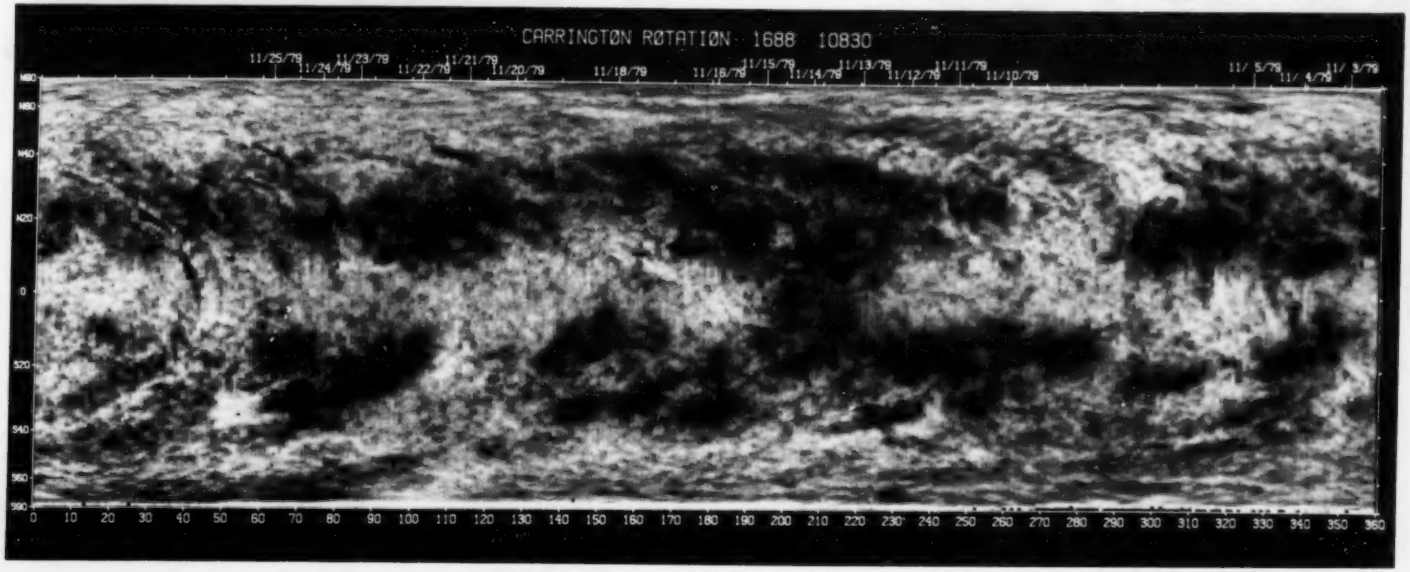
CARRINGTON ROTATION 1687

KITT PEAK NATIONAL OBSERVATORY



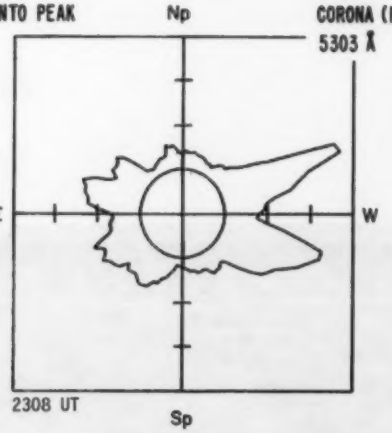
HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1688



NOVEMBER 1, 1979 (P = 24.63, B_o = 4.41, L_o = 29.09)

SACRAMENTO PEAK

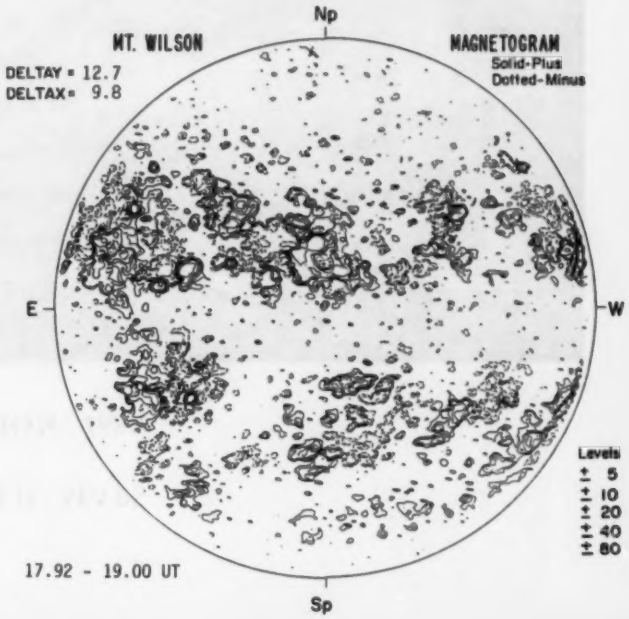


2308 UT

KITT PEAK

1509 UT

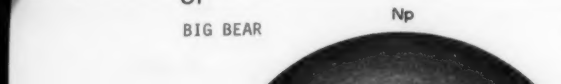
MT. WILSON



17.92 - 19.00 UT

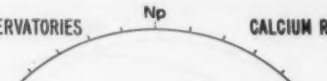
01

BIG BEAR



BOULDER

SUNSPOTS HALE OBSERVATORIES



CALCIUM REPORT

Sp

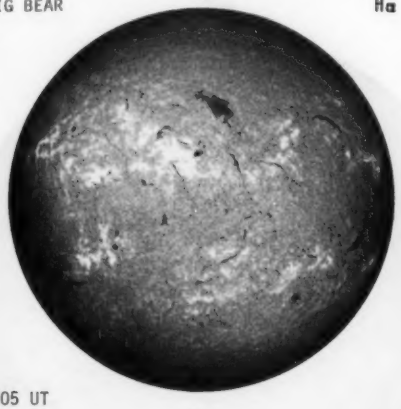
Sp

01

BIG BEAR

Np

Hα



E

W

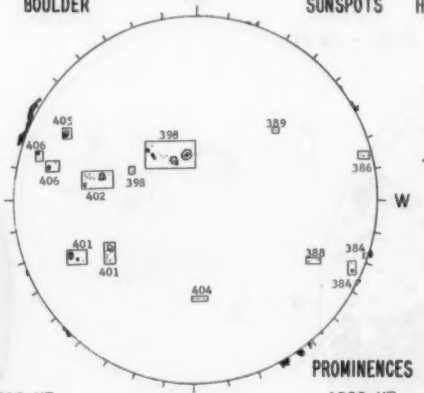
1905 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

PROMINENCES

1510 UT

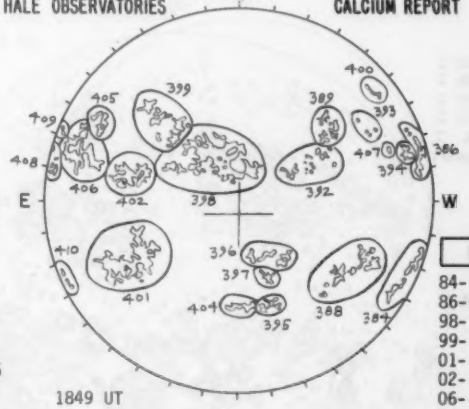
1529 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1849 UT

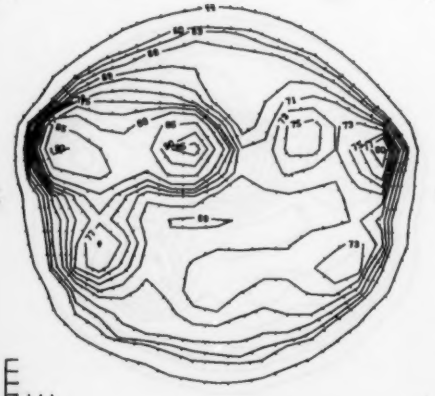
Sp

FAIR	M
84- 3800-3.0	
86- 2600-2.5	
98- 5600-3.5	
99- 2300-2.5	
01- 5200-3.5	
02- 2300-3.5	
06- 4500-3.0	
09- 0300-2.5	

NOSC LA POSTA

Np

2.0 CM



E

W

1640 UT

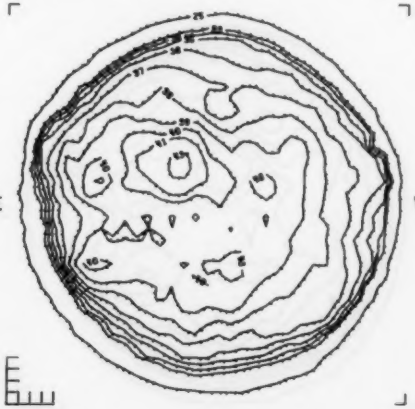
Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM



E

W

1549 UT

Sp

Ant. Temp. Unit 100° K

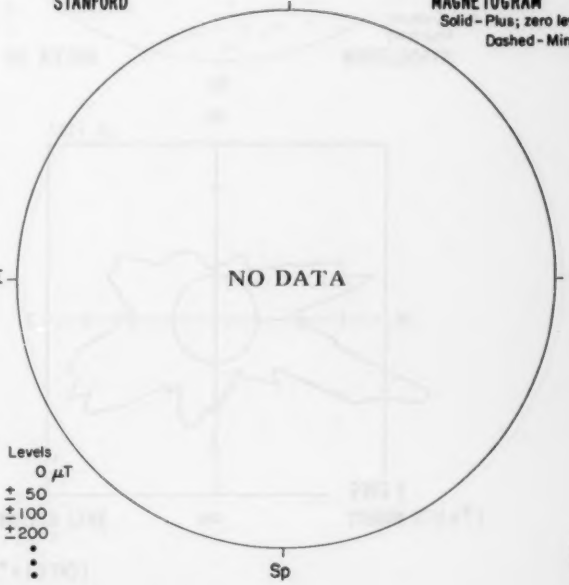
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

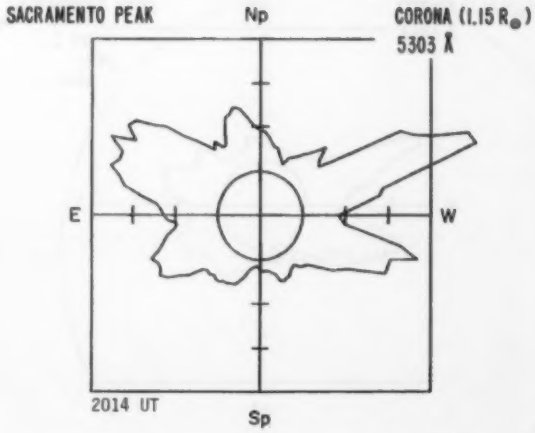
Sp

49

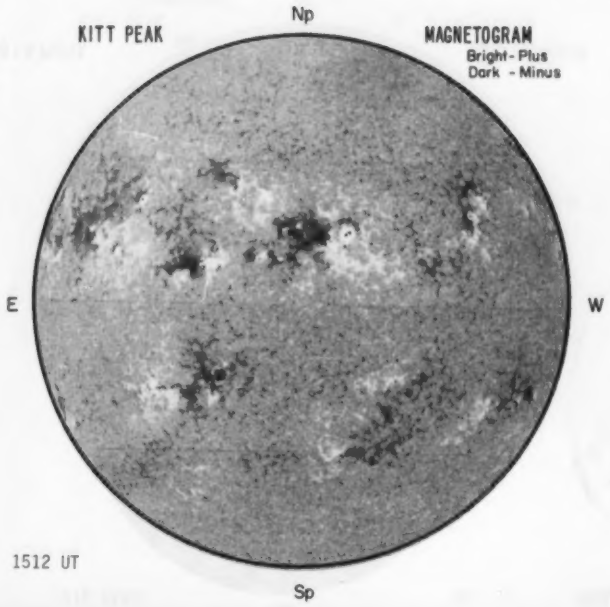
Nov 79

NOVEMBER 2, 1979 (P = 24.47, B_o = 4.31, L_o = 15.90)

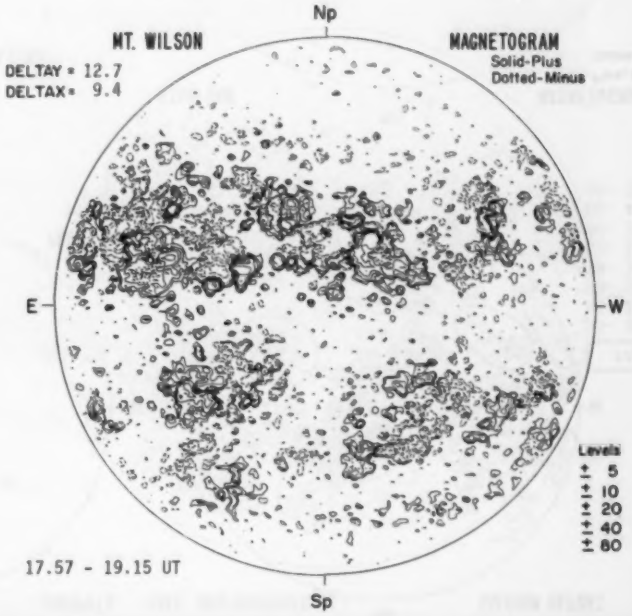
SACRAMENTO PEAK



KITT PEAK

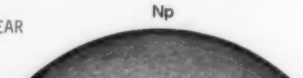


MT. WILSON



O2

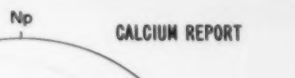
BIG BEAR



Hα

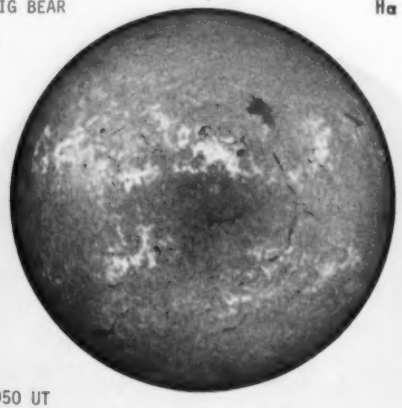
BOULDER

SUNSPOTS HALE OBSERVATORIES



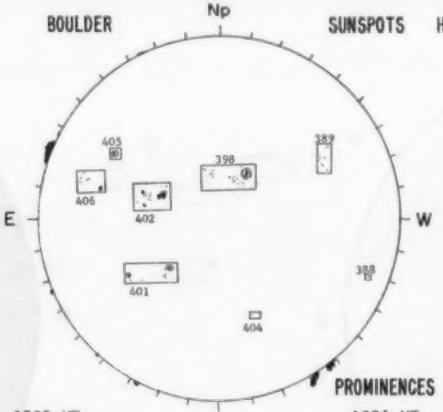
CALCIUM REPORT

BIG BEAR Hα



1950 UT

BOULDER SUNSPOTS

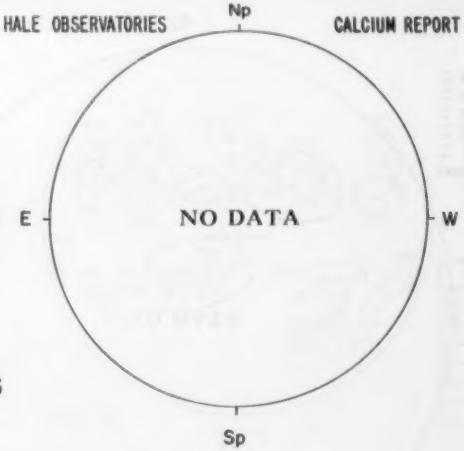


1505 UT

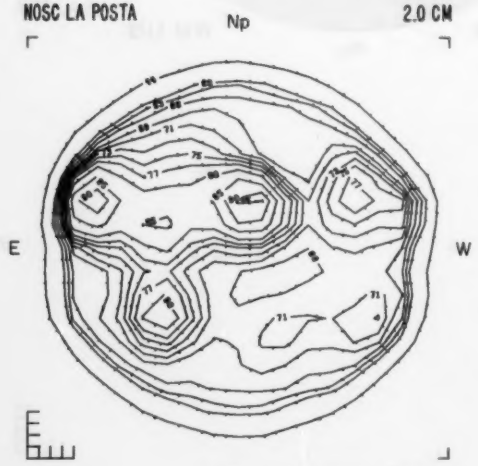
PROMINENCES

1624 UT

HALE OBSERVATORIES CALCIUM REPORT



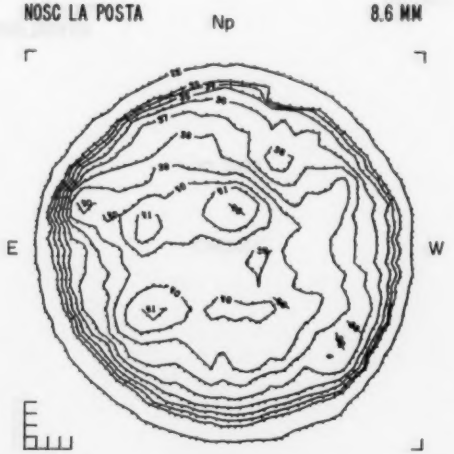
NOSC LA POSTA 2.0 CM



1657 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

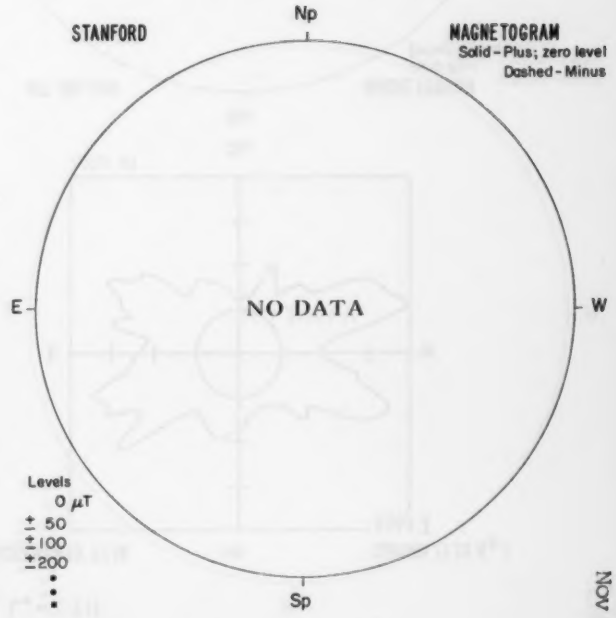


1608 UT

Ant. Temp. Unit 100° K

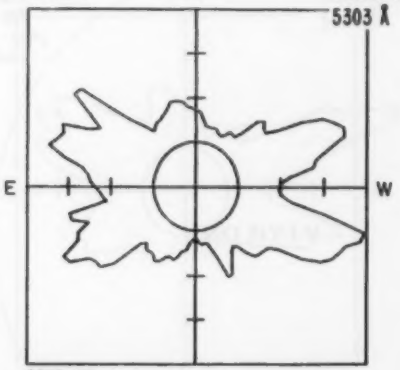
STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



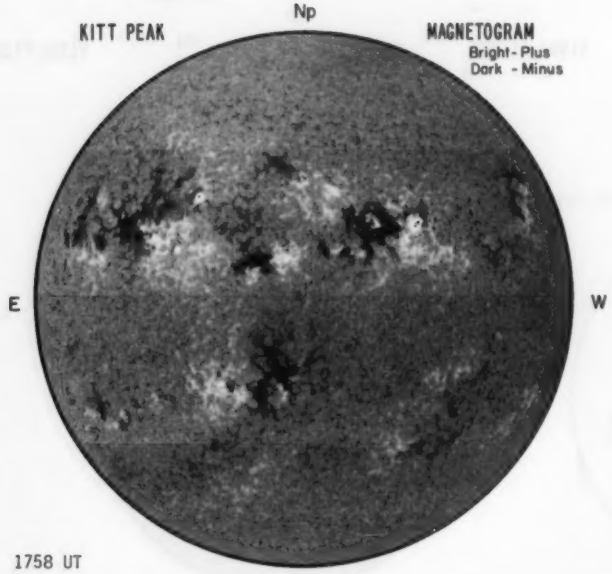
NOVEMBER 3, 1979 (P = 24.29, B_o = 4.20, L_o = 2.71)

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$)
5303 Å



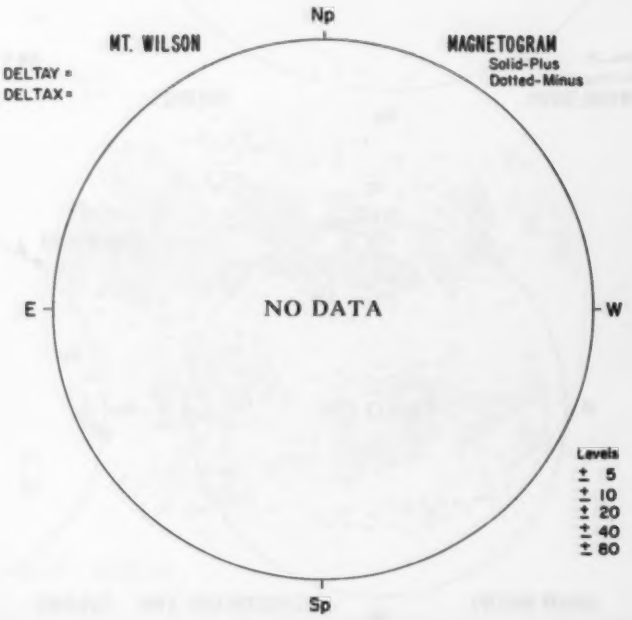
2309 UT

KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



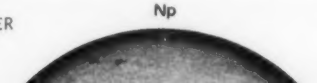
1758 UT

MT. WILSON — MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =



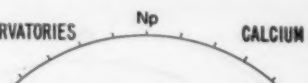
03

BOULDER — Hα



BOULDER — SUNSPOTS

HALE OBSERVATORIES — CALCIUM REPORT



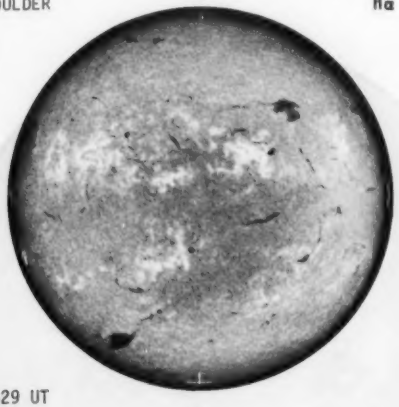
Sp

03

BOULDER

Np

Hα



E W

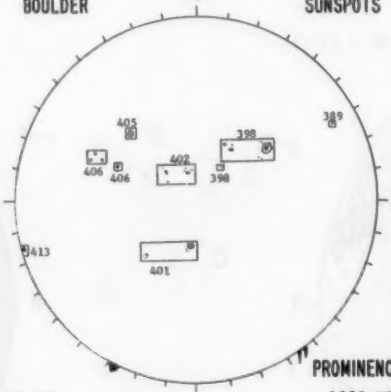
1829 UT

Sp

BOULDER

Np

SUNSPOTS



E W

2010 UT

Sp

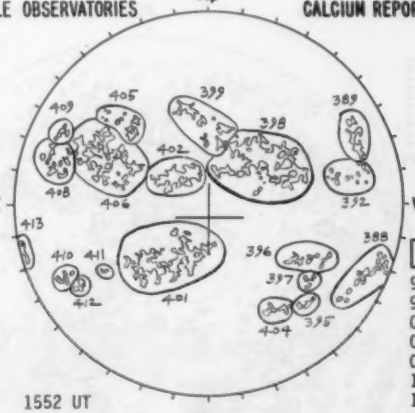
PROMINENCES

1829 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

1552 UT

Sp

GOOD	M
98-	6500-3.5
99-	2300-2.5
01-	5100-3.5
02-	2400-3.5
06-	5700-3.5
12-	0400-2.5
13-	1500-3.5

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Sp

Levels

0 μT

± 50

±100

±200

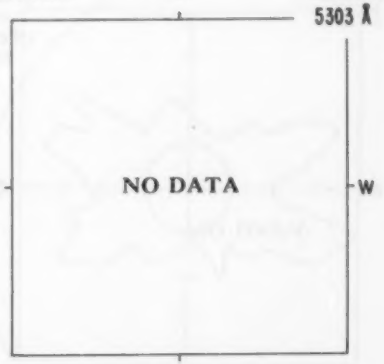
53

Nov 79

NOVEMBER 4, 1979 (P = 24.11, B_o = 4.10, L_o = 349.53)

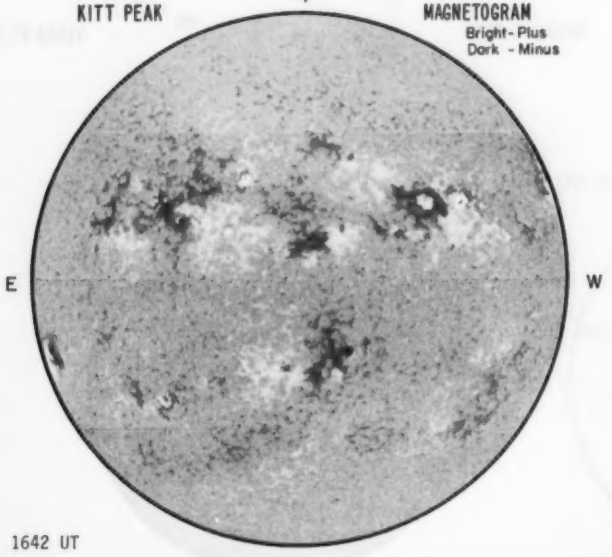
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

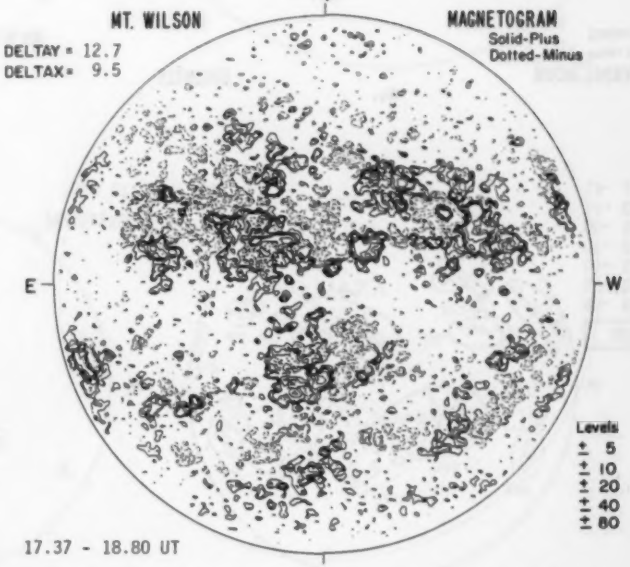


1642 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

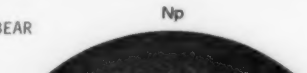


17.37 - 18.80 UT

04

BIG BEAR

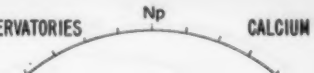
Hα



BOULDER

SUNSPOTS

HALE OBSERVATORIES



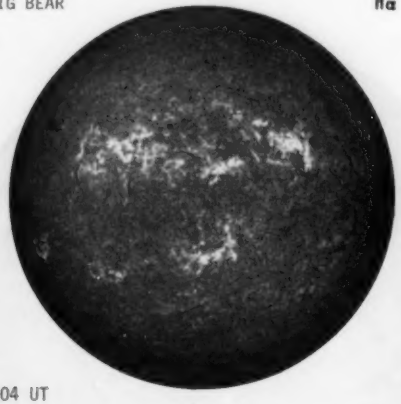
CALCIUM REPORT

04

BIG BEAR

Np

Hα



E W

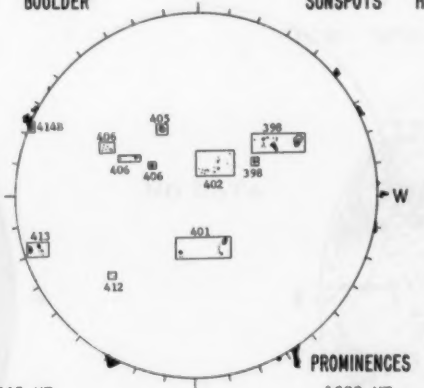
Sp

2004 UT

BOULDER

Np

SUNSPOTS



E W

Sp

1545 UT

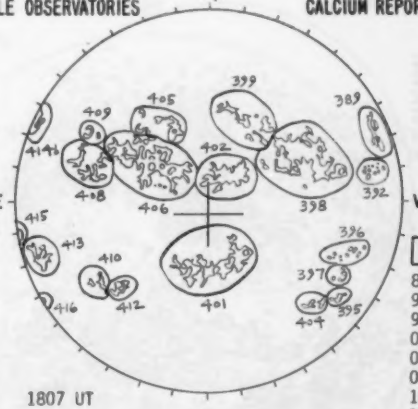
PROMINENCES

1600 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

Sp

1807 UT

GOOD	M
89- 1300-3.0	
98- 6500-3.5	
99- 2300-2.5	
01- 4500-3.0	
02- 2500-3.0	
06- 5500-3.0	
12- 0600-3.5	
13- 2500-3.5	
16- 0300-3.5	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Sp

Levels

0 μT

± 50

±100

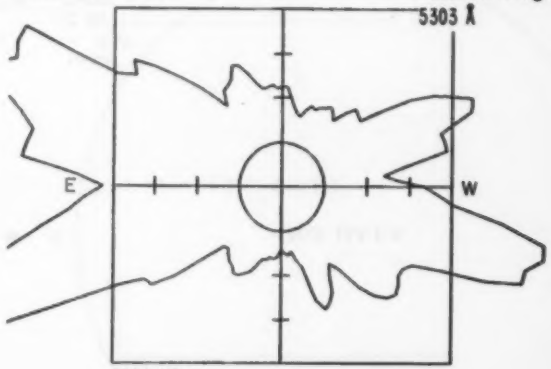
±200

55

NOV 79

NOVEMBER 5, 1979 (P = 23.92, B_o = 3.99, L_o = 336.34)

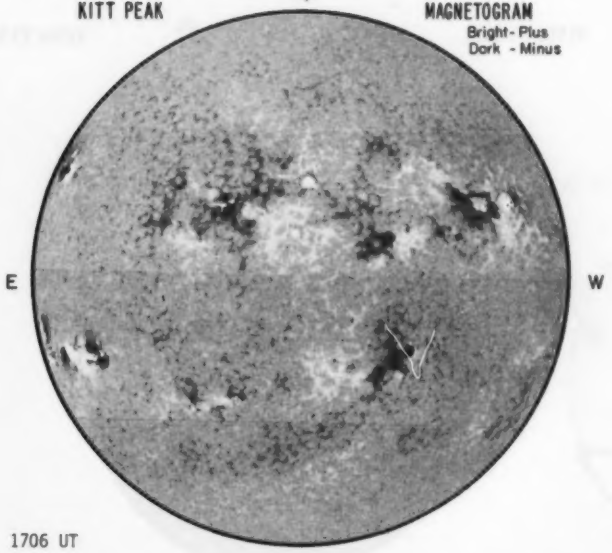
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



2009 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

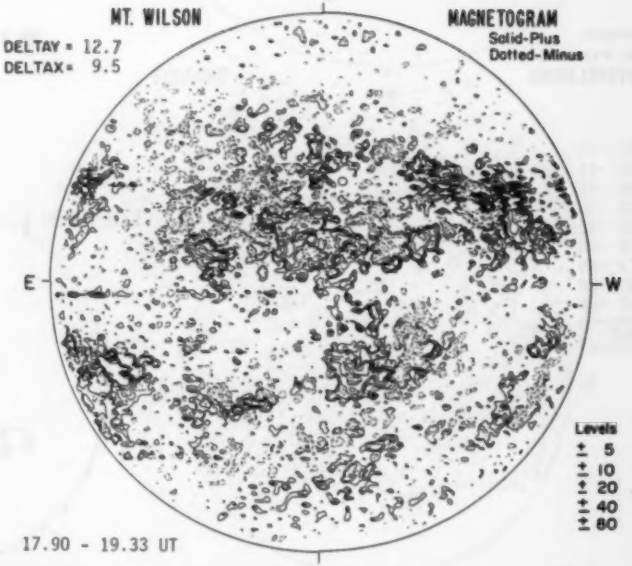


1706 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5



17.90 - 19.33 UT

Sp

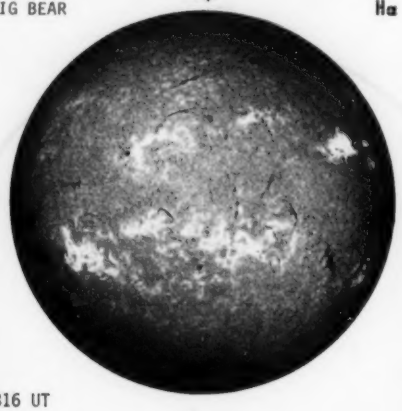
O5
BIG BEAR Np Hα

BOULDER Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

05

BIG BEAR Np Hα



E W

1816 UT Sp

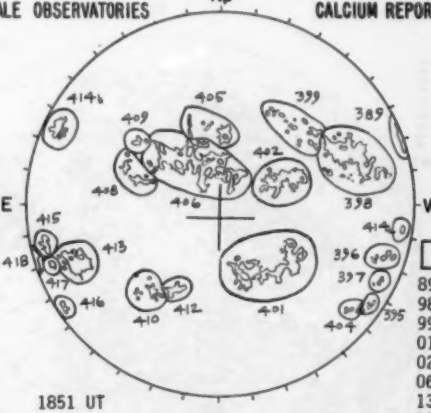
BOULDER Np SUNSPOTS

NO DATA

E W

PROMINENCES Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1851 UT Sp

GOOD	M
89-	1000-3.0
98-	6500-4.5
99-	2000-4.5
01-	4400-3.0
02-	2500-3.0
06-	6000-3.0
13-	3000-4.0
14b-	2200-2.5
16-	0700-3.5
17-	1000-3.5
18-	1200-2.5

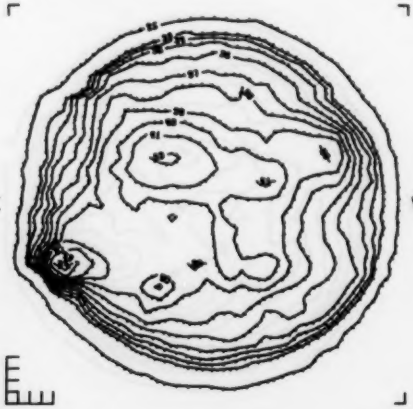
NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



E W

1552 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E W

Levels

0 μT

± 50

±100

±200

Sp

57

Nov 79

NOVEMBER 6, 1979 (P = 23.72, B_o = 3.89, L_o = 323.16)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E — NO DATA — W

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.5

E — W

Levels
± 5
± 10
± 20
± 40
± 80

17.98 - 19.62 UT

Sp

06

BIG BEAR

Np

Hα

BOULDER

Np

SUNSPOTS

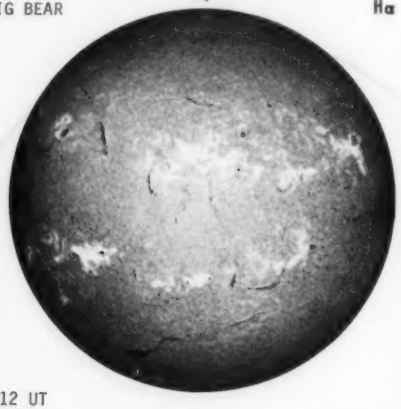
HALE OBSERVATORIES

Np

CALCIUM REPORT

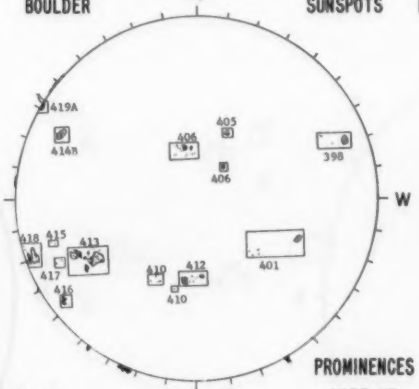
06

BIG BEAR Hα



1712 UT

BOULDER SUNSPOTS

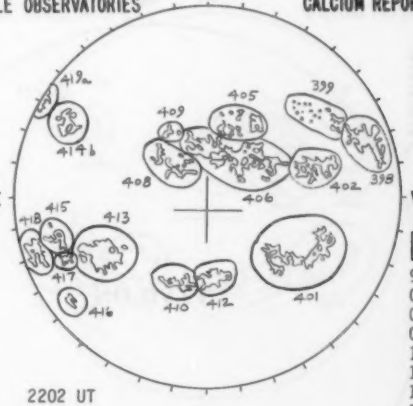


1530 UT

PROMINENCES

1457 UT

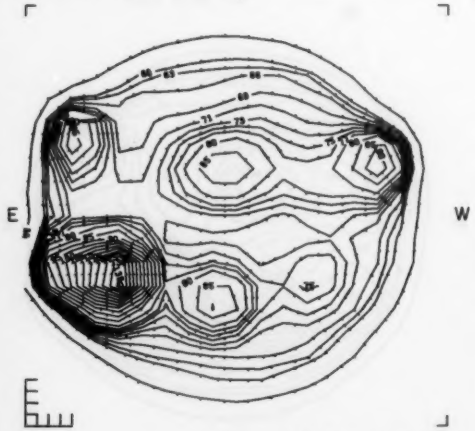
HALE OBSERVATORIES CALCIUM REPORT



2202 UT

GOOD	M
98- 5400	3.5
01- 3900	2.5
02- 2300	2.5
06- 6200	3.5
12- 1500	3.5
13- 4000	4.0
14b-2100	3.0
16- 0500	3.0
18- 3000	3.5
19a-2300	3.0

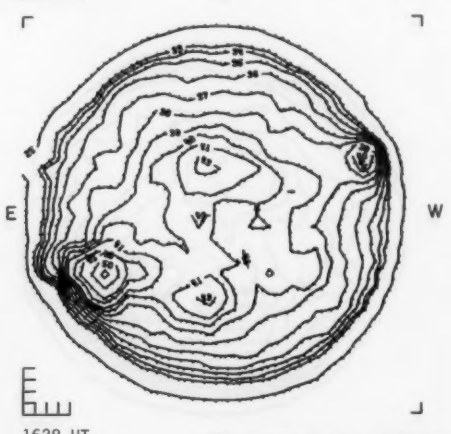
NOSC LA POSTA 2.0 CM



1721 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

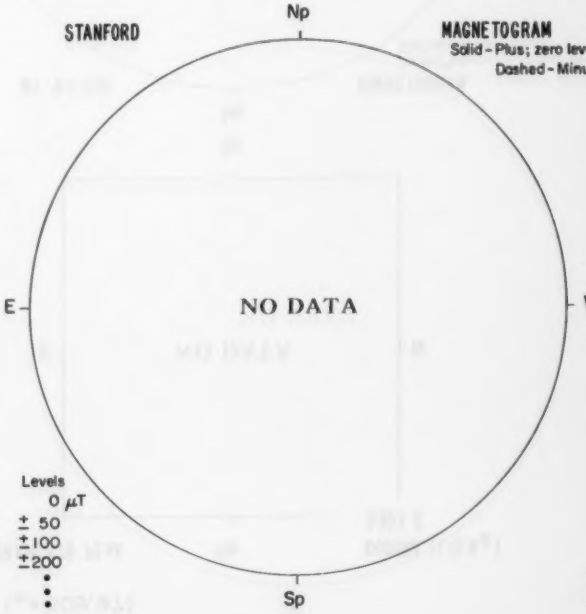


1628 UT

Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200

59
Nov 79

NOVEMBER 7, 1979 (P = 23.52, B_o = 3.78, L_o = 309.97)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

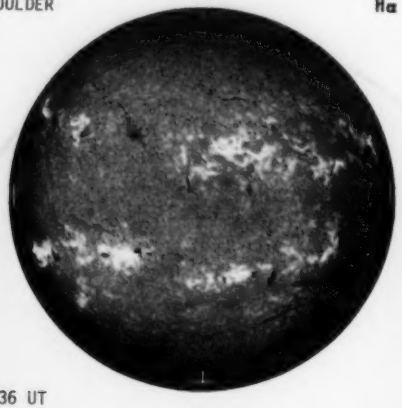
07
BOULDER Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

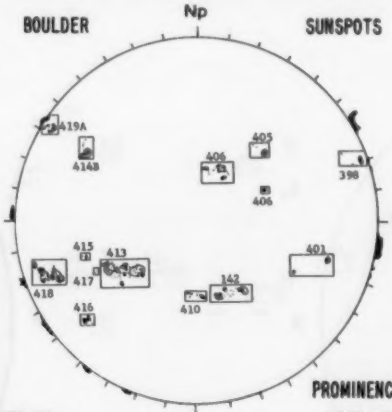
07

BOULDER Np Hα



1536 UT

BOULDER Np SUNSPOTS

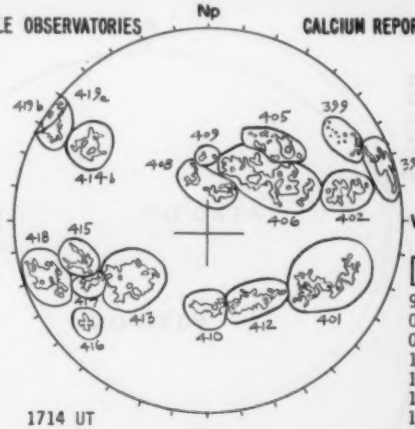


1450 UT

PROMINENCES

1536 UT

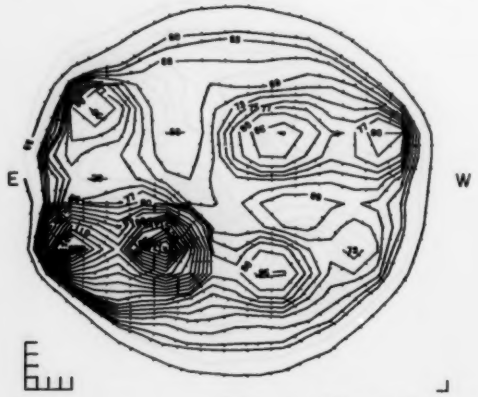
HALE OBSERVATORIES Np CALCIUM REPORT



1714 UT

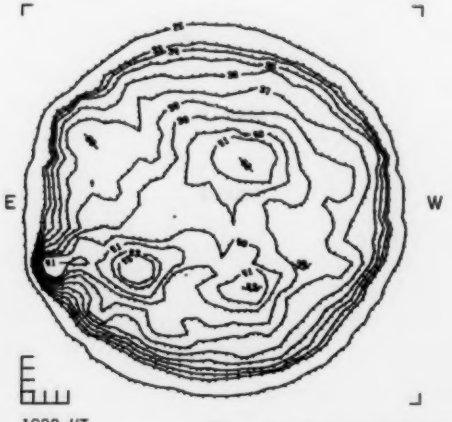
GOOD	M
98- 4800-3.5	
01- 4200-2.5	
06- 5800-3.0	
10- 1100-2.5	
12- 2400-3.5	
13- 5000-3.5	
14b-2000-2.5	
16- 0700-3.0	
18- 5000-3.5	
19a-2500-2.5	

NOSC LA POSTA Np 2.0 CM



1923 UT Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



1829 UT Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

Levels 0 μT
± 50
±100
±200

61

NOV 79

NOVEMBER 8, 1979 (P = 23.31, B_o = 3.67, L_o = 296.79)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

08
BIG BEAR Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

08

BIG BEAR

Np

Hα

E W

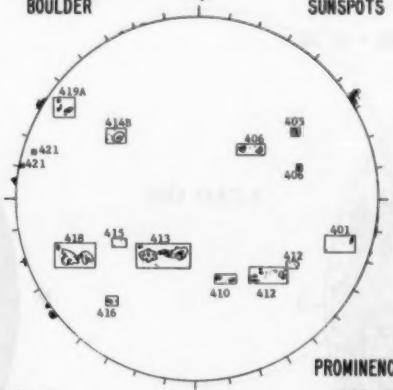
1800 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1515 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT

NO DATA

E W

Sp

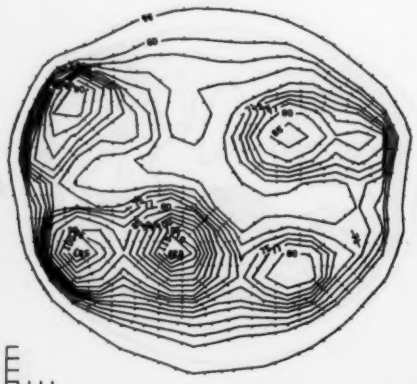
PROMINENCES

1346 UT

NOSC LA POSTA

Np

2.0 CM



E W

1738 UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

CLOUDY

1637 UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E W

Levels

0 μT

± 50

±100

±200

•

•

•

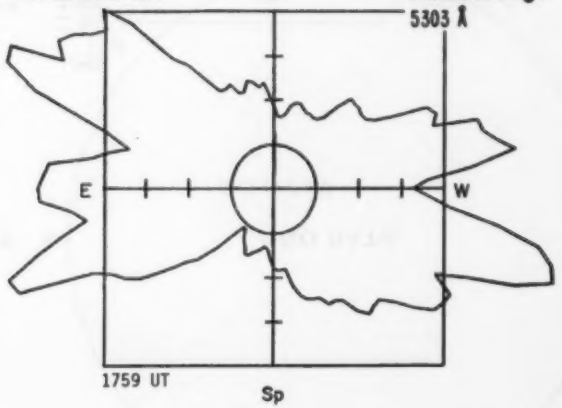
Sp

63

Nov 79

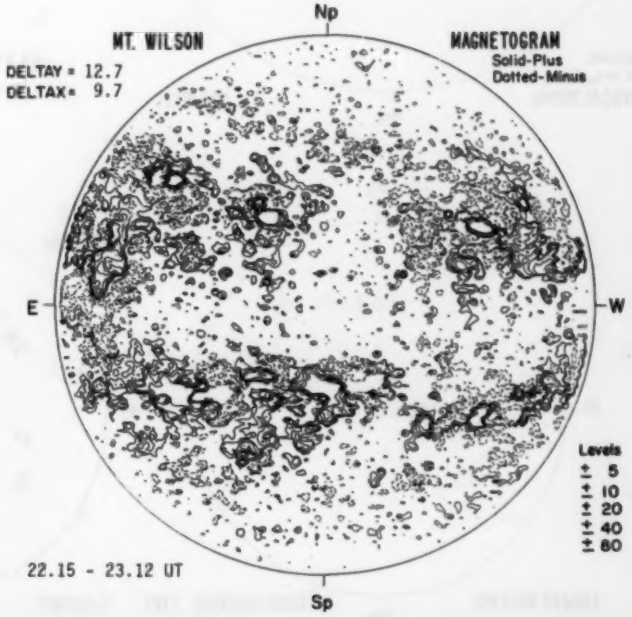
NOVEMBER 9, 1979 (P = 23.08, B_o = 3.56, L_o = 283.60)

SACRAMENTO PEAK



KITT PEAK

MT. WILSON



09

BIG BEAR

Hα

BOULDER

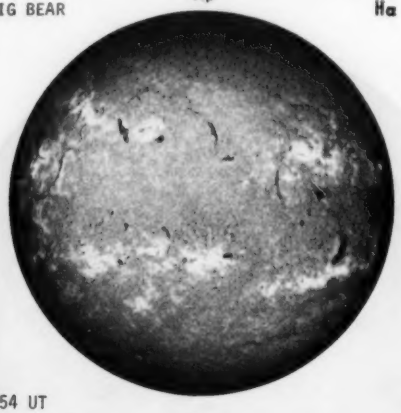
SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

09

BIG BEAR Hα

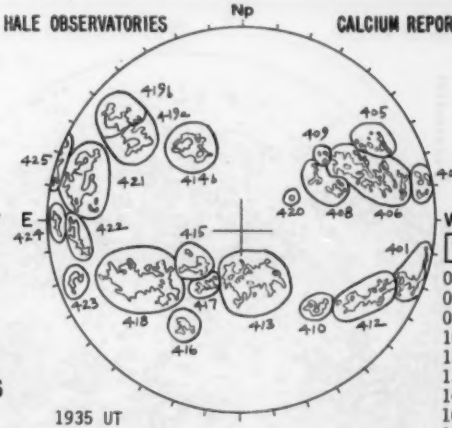


1754 UT

BOULDER SUNSPOTS

PROMINENCES

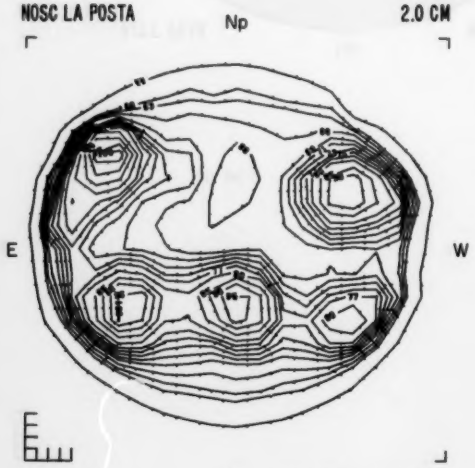
HALE OBSERVATORIES CALCIUM REPORT



1935 UT

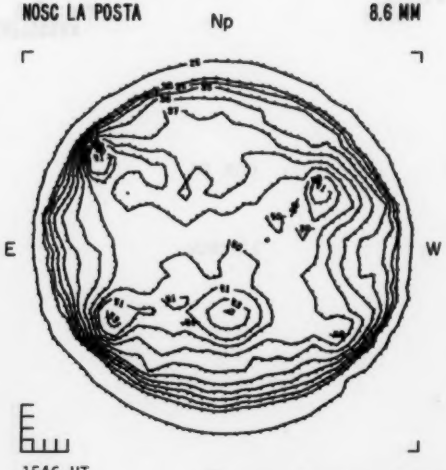
V GOOD	M
01- 3500-1.5	
02- 1500-2.5	
06- 5500-3.5	
10- 1000-2.5	
12- 3500-3.0	
13- 5000-3.5	
14b-2000-3.5	
16- 0700-3.5	
18- 6800-3.5	
19a-2700-2.5	
19b-2800-3.0	
21- 4500-2.5	

NOSC LA POSTA 2.0 CM



1639 UT Ant. Temp. Unit 100° K

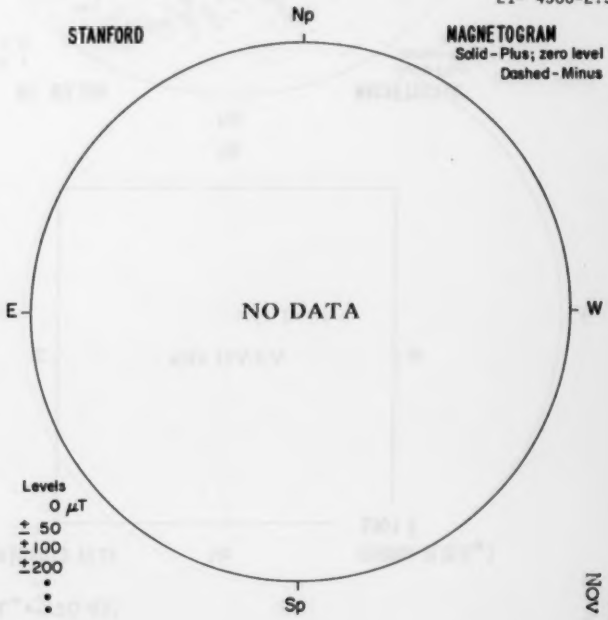
NOSC LA POSTA 8.6 MM



1546 UT Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200

65
NOV 79

NOVEMBER 10, 1979 (P = 22.86, B_o = 3.45, L_o = 270.42)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$) 5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus

E W

1608 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY = 12.7
DELTAX = 9.8

E W

Levels ± 5 ± 10 ± 20 ± 40 ± 80

18.63 - 19.57 UT

Sp

10

BIG BEAR Np Hα

BOULDER Np

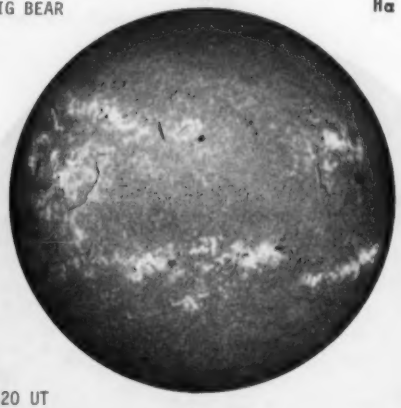
SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

10

BIG BEAR

Np

Hα



E W

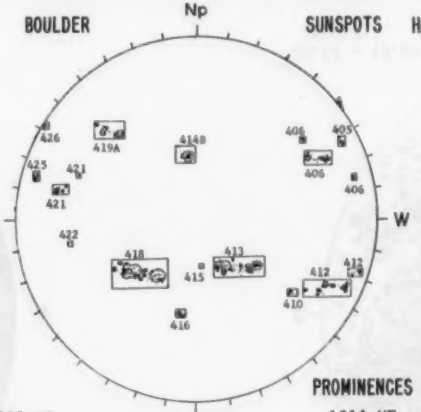
Sp

2120 UT

BOULDER

Np

SUNSPOTS



E W

Sp

1545 UT

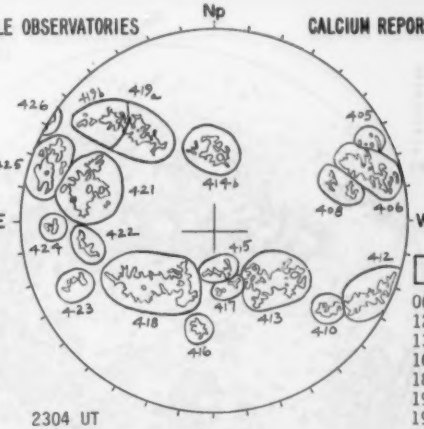
PROMINENCES

1614 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

Sp

2304 UT

FAIR	M
06- 4800-3.0	
12- 3500-3.0	
13- 5400-3.5	
16- 0900-2.5	
18- 6500-3.5	
19a-2800-2.5	
19b-2500-3.0	
21- 5200-3.0	
25- 3800-2.0	

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

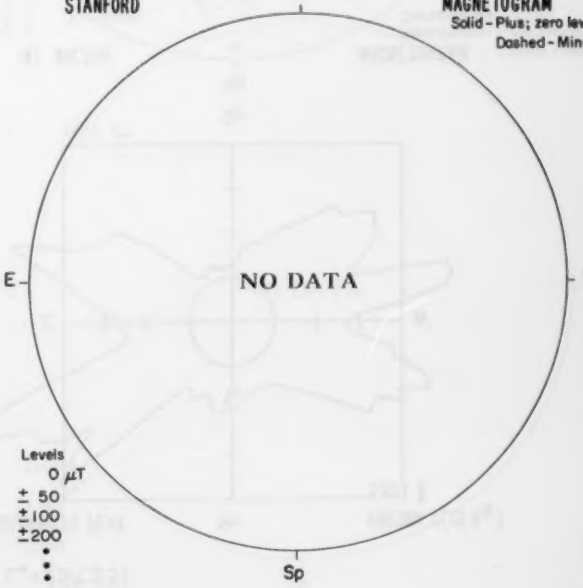
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

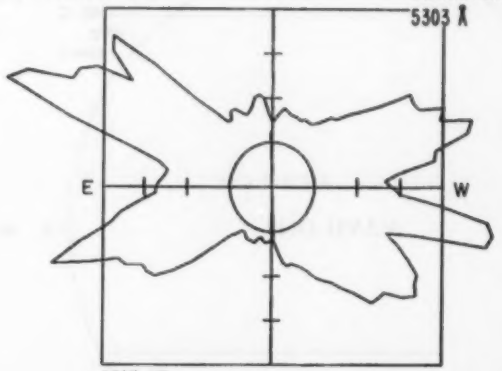
±200

67

NOV 79

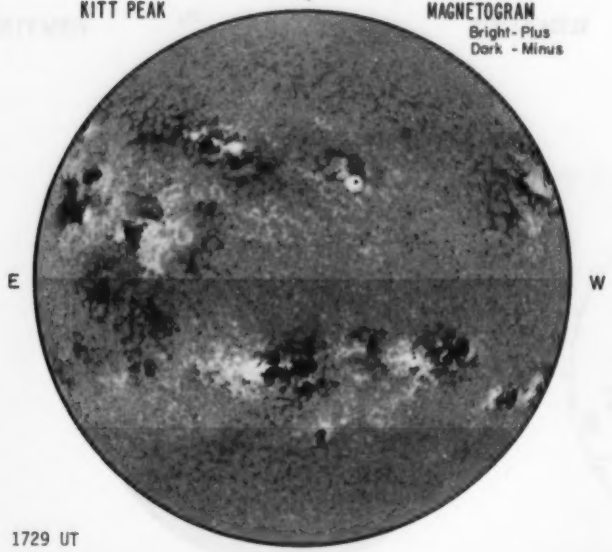
NOVEMBER 11, 1979 (P = 22.62, B_o = 3.34, L_o = 257.23)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



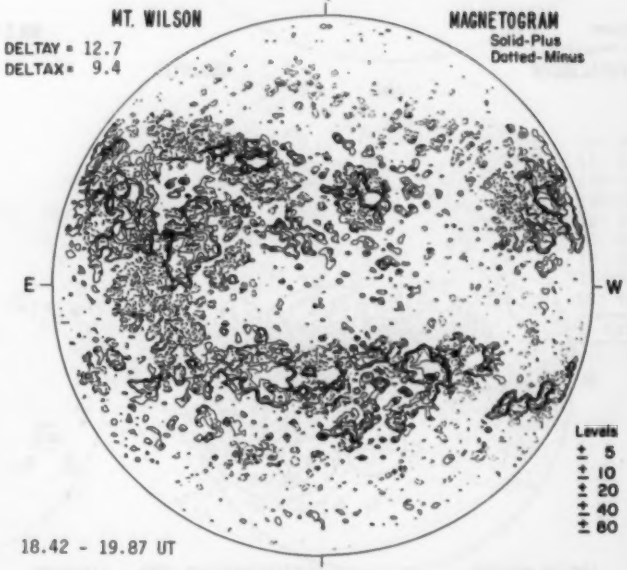
1607 UT
Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1729 UT
Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.4

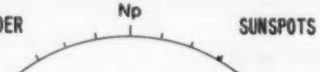


18.42 - 19.87 UT
Sp

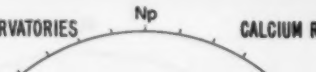
II

SACRAMENTO PEAK Np Hα

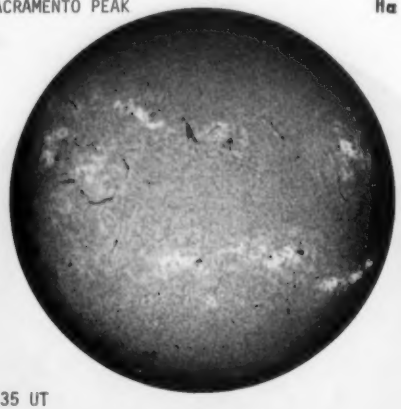
BOULDER Np SUNSPOTS



HALE OBSERVATORIES Np CALCIUM REPORT



SACRAMENTO PEAK Np Hα

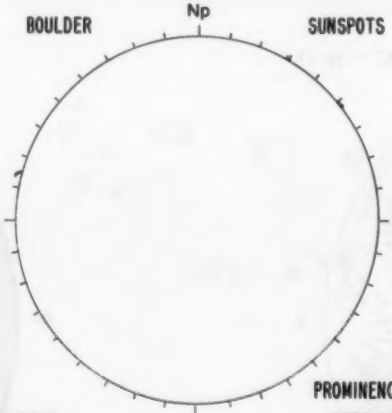


E W

1435 UT

Sp

BOULDER Np SUNSPOTS



E W

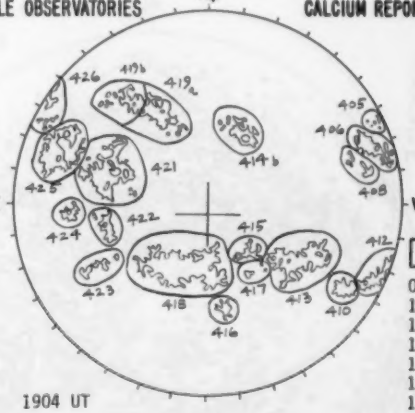
NO DATA

Sp

PROMINENCES

1803 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1904 UT

Sp

FAIR	M
06-	3900-3.0
10-	1400-2.5
12-	3500-3.0
13-	5000-3.0
16-	0700-2.5
18-	8000-3.5
19a-	2800-3.5
19b-	2300-3.5
21-	5200-3.5
25-	4500-2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E W

SCHEDULE

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E W

SCHEDULE

---- UT

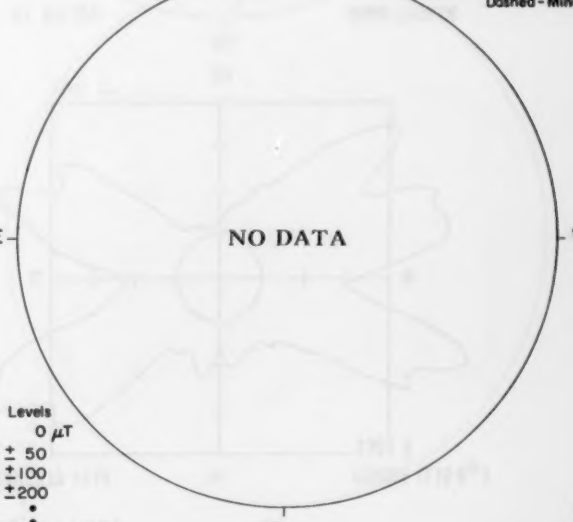
Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

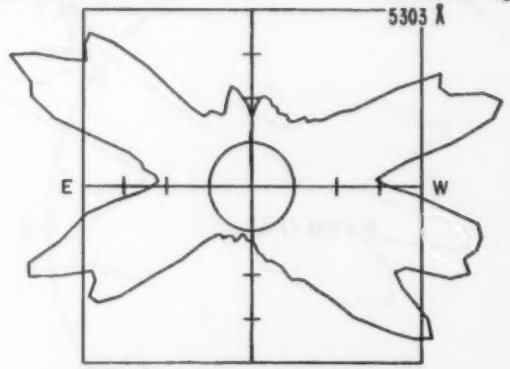
•

•

•

NOVEMBER 12, 1979 (P = 22.38, B_o = 3.23, L_o = 244.05)

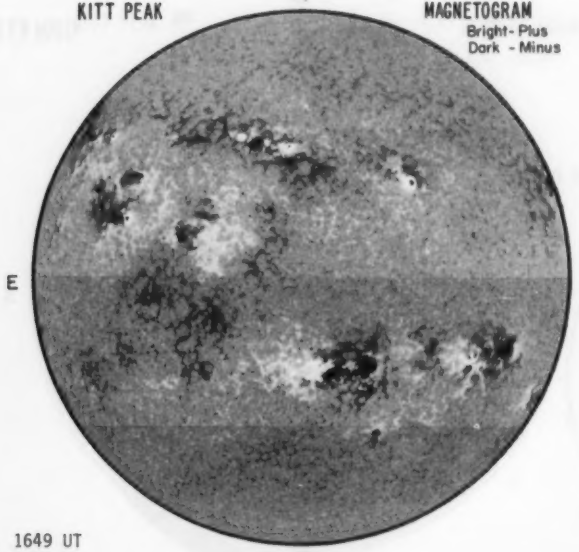
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1951 UT

Sp

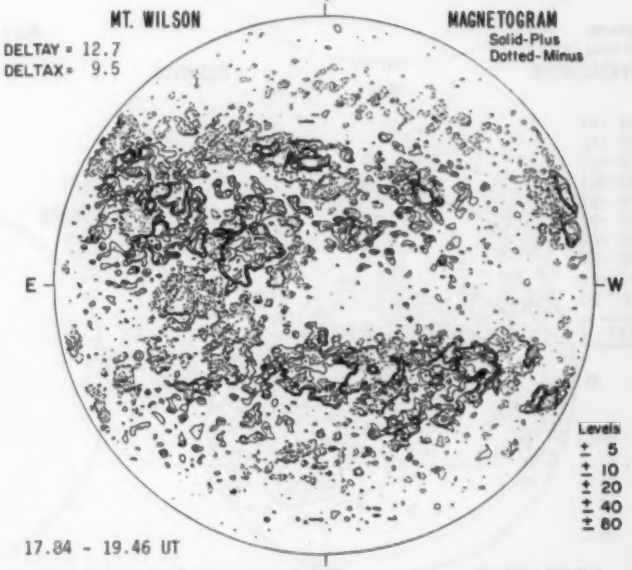
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1649 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5



17.84 - 19.46 UT

Sp

12

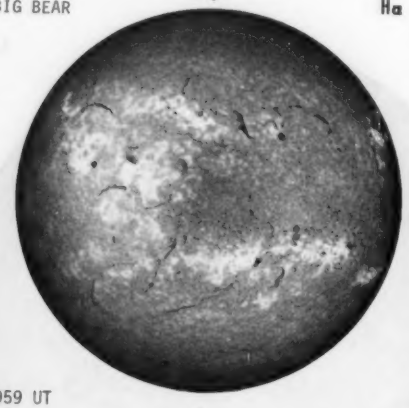
BIG BEAR Np Hα

BOULDER Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

12

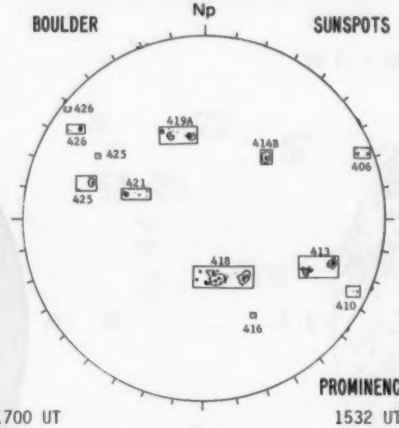
BIG BEAR Np Hα



E W

1959 UT Sp

BOULDER Np SUNSPOTS



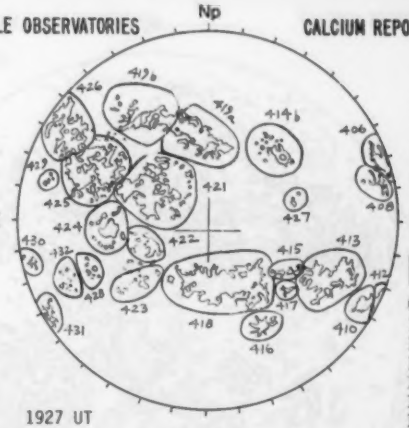
E W

1700 UT Sp

PROMINENCES

1532 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

Sp

FAIR	A

06- 3500-3.5
10- 1600-2.5
12- 2300-3.5
13- 5500-3.0
18- 8500-3.5
19a-3500-3.5
19b-2800-3.0
21- 5900-3.0
25- 4800-3.5
26- 4000-3.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NO DATA

E W

Sp

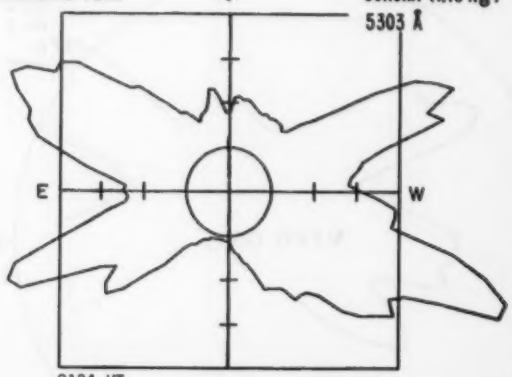
Levels
0 μT
± 50
±100
±200

NOV 76

71

NOVEMBER 13, 1979 (P=22.12, B_o=3.11, L_o=230.86)

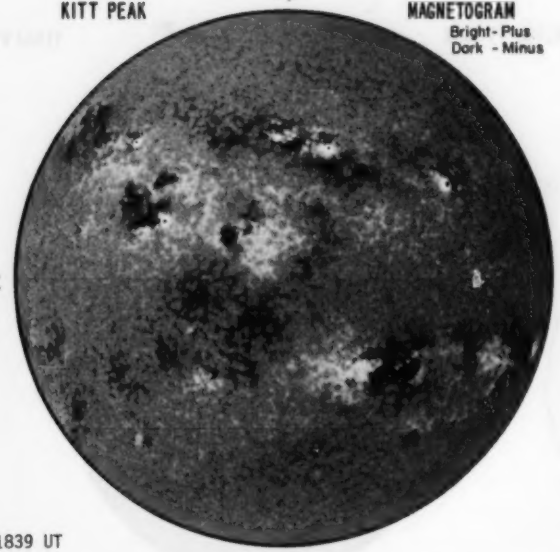
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



2134 UT

Sp

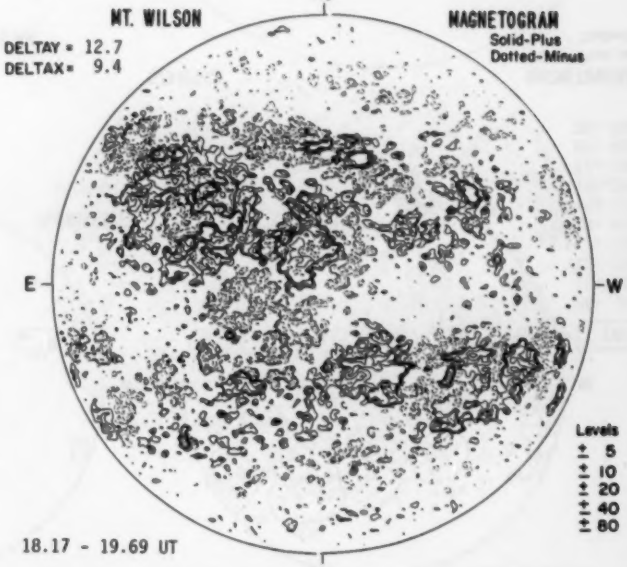
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1839 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.4



18.17 - 19.69 UT

Sp

13

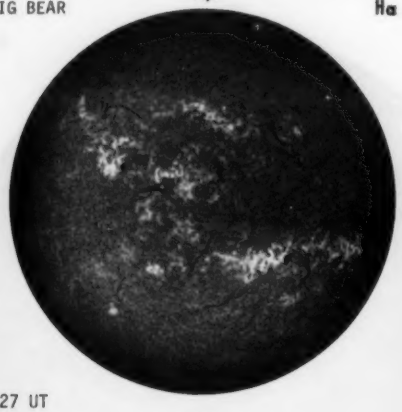
BIG BEAR Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

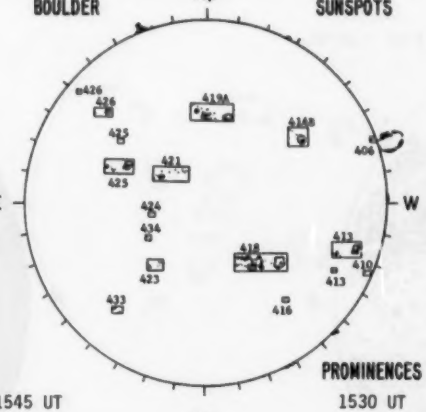
13

BIG BEAR Np Hα



1827 UT

BOULDER Np SUNSPOTS

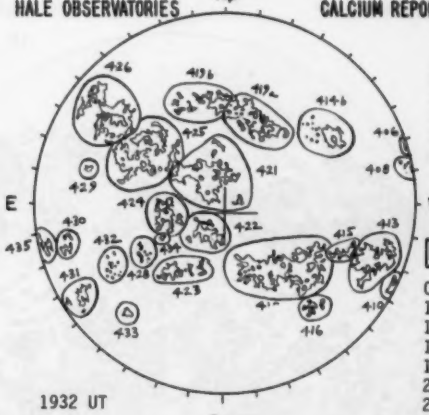


1545 UT

PROMINENCES

1530 UT

HALE OBSERVATORIES Np CALCIUM REPORT

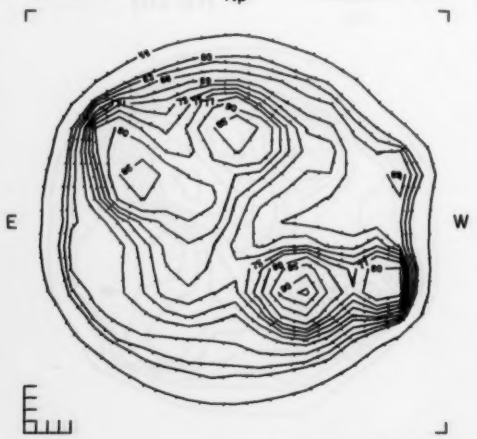


1932 UT

FAIR	M

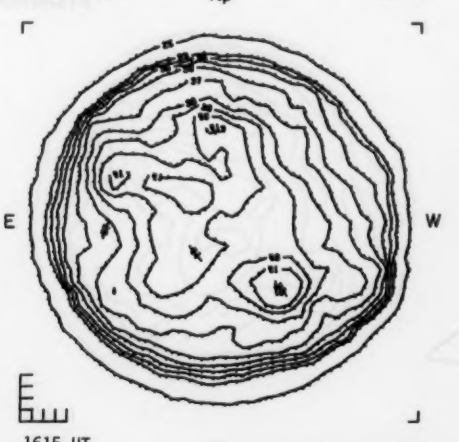
06- 0800-3.5
13- 5300-3.0
18- 9000-3.5
19a-3800-3.5
19b-2500-3.5
21- 5400-3.0
23- 1000-3.0
24- 1100-2.5
25- 4800-3.0
26- 5300-3.0
33- 0300-3.5

NOSC LA POSTA Np 2.0 CM



1709 UT Ant. Temp. Unit 100° K

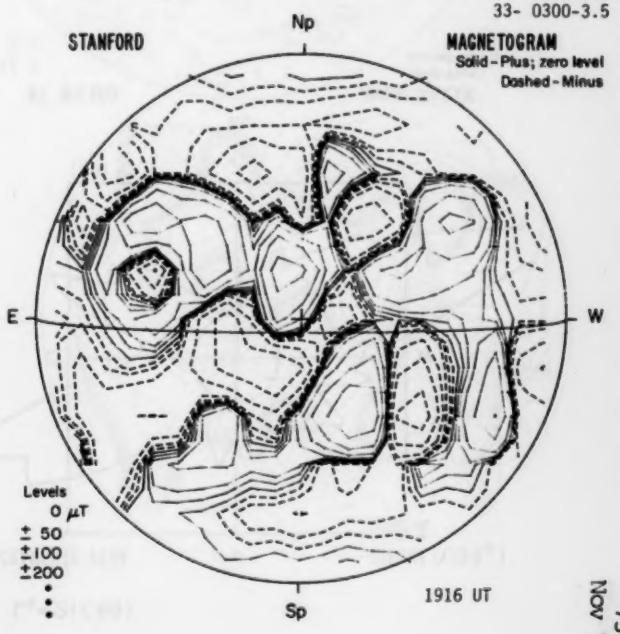
NOSC LA POSTA Np 8.6 MM



1615 UT Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200

1916 UT

73 Nov 79

NOVEMBER 14, 1979 (P = 21.86, B_o = 3.00, L_o = 217.68)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å
E W
1720 UT
Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus
E W
1632 UT
Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5
E W
Levels
± 5
± 10
± 20
± 40
± 80
18.12 - 19.61 UT
Sp

14
BIG BEAR Np Hα
BOULDER Np SUNSPOTS
HALE OBSERVATORIES Np CALCIUM REPORT

Sp

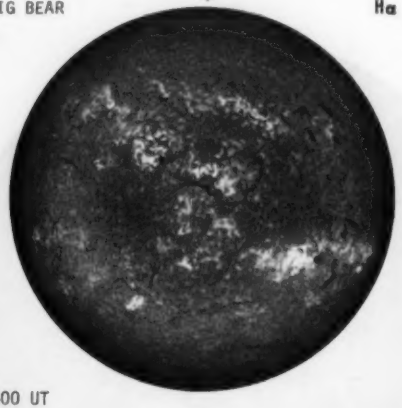
Sp

14

BIG BEAR

Np

Hα



E

W

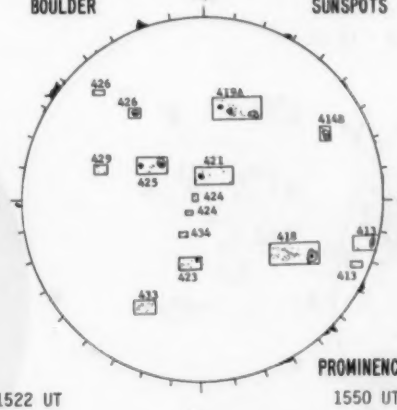
1800 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

PROMINENCES

1522 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT

E

W

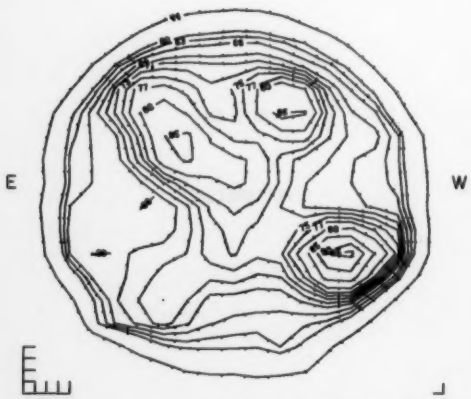
1550 UT

Sp

NOSC LA POSTA

Np

2.0 CM



E

W

1855 UT

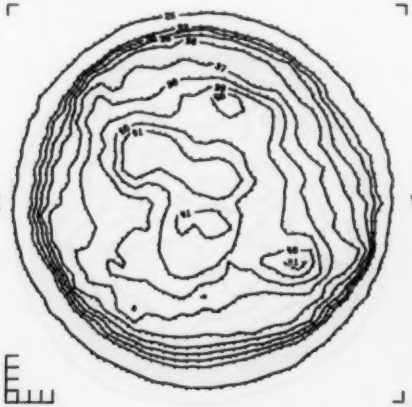
Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM



E

W

1603 UT

Sp

Ant. Temp. Unit 100° K

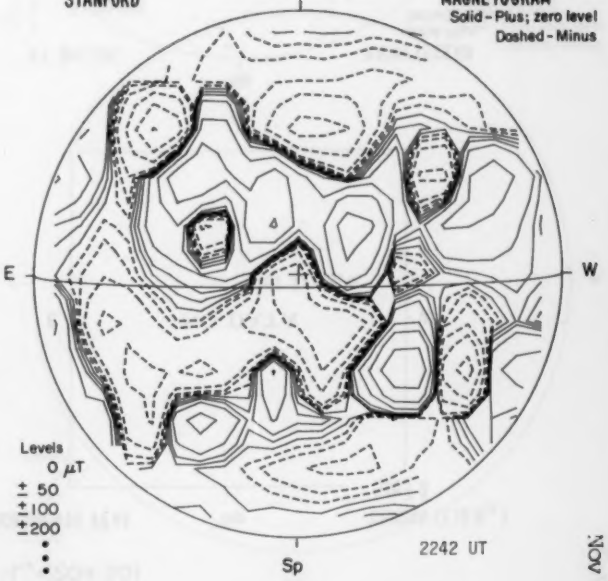
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

2242 UT

Sp

75 NOV 79

NOVEMBER 15, 1979 (P = 21.60, B_o = 2.88, L_o = 204.50)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1532 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.8

E

W

Levels
± 5
± 10
± 20
± 40
± 80

20.81 - 21.75 UT

Sp

15

BIG BEAR

Np

Hα

BOULDER

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

Sp

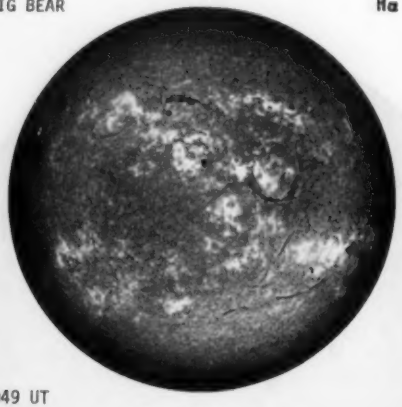
Sp

15

BIG BEAR

Np

Hα



E W

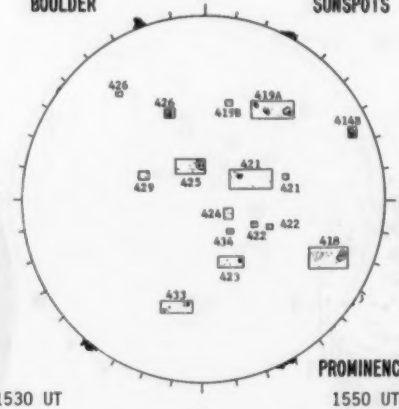
2049 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1530 UT

Sp

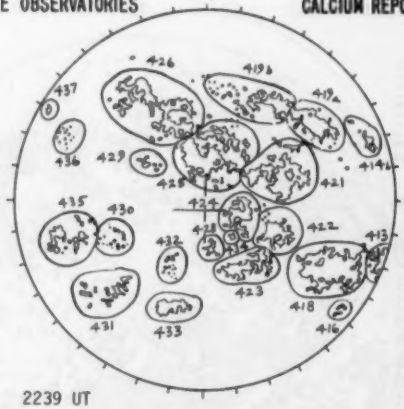
PROMINENCES

1550 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

2239 UT

Sp

POOR	M

13- 2000-3.0
18- 8700-3.5
19a-3800-3.5
19b-2500-2.5
21- 5200-3.0
23- 1800-2.5
24- 1200-2.5
25- 5200-3.5
26- 5400-3.0
33- 1500-4.0

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

CALIBRATION

W

1953 UT

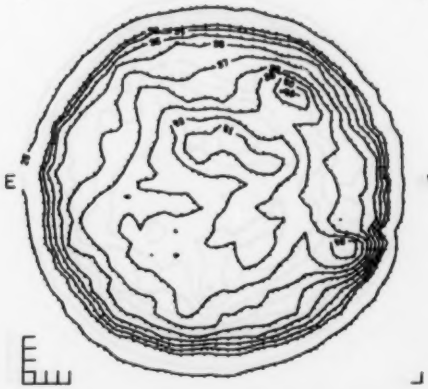
Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM



E W

1855 UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E W

Levels

0 μT

± 50

±100

±200

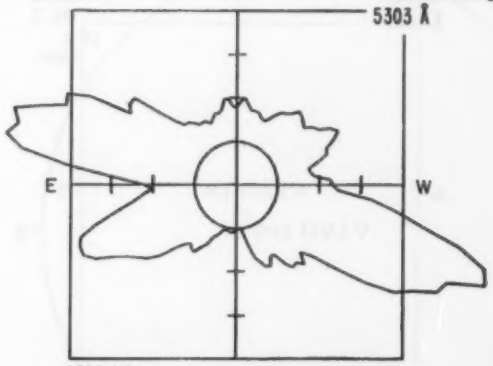
Sp

77

Nov 79

NOVEMBER 16, 1979 (P=21.32, B_o=2.76, L_o=191.32)

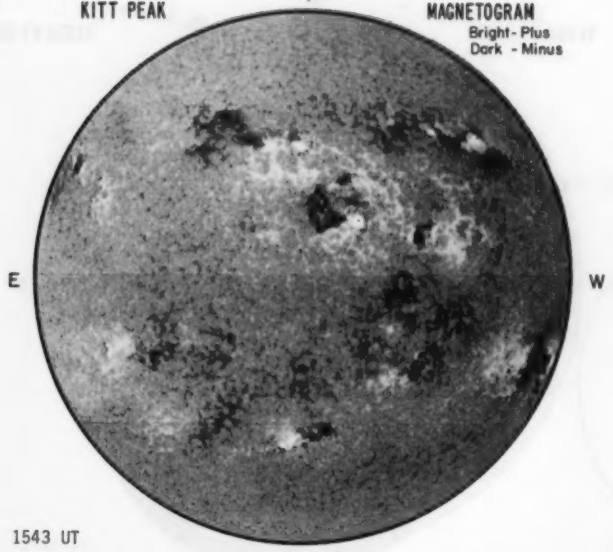
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1604 UT

Sp

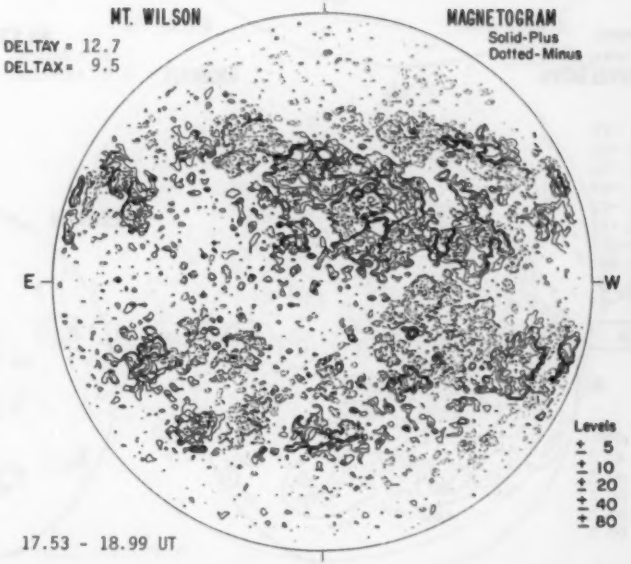
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1543 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5



17.53 - 18.99 UT

Sp

16

BOULDER Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

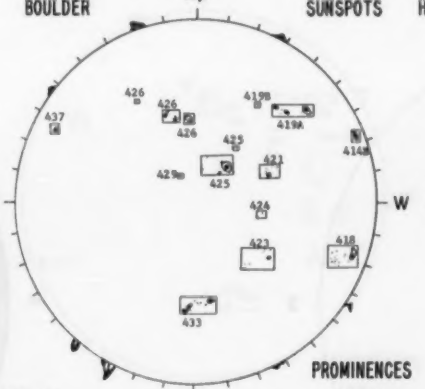
16

BOULDER Np Hα

E W

1533 UT Sp

BOULDER Np SUNSPOTS

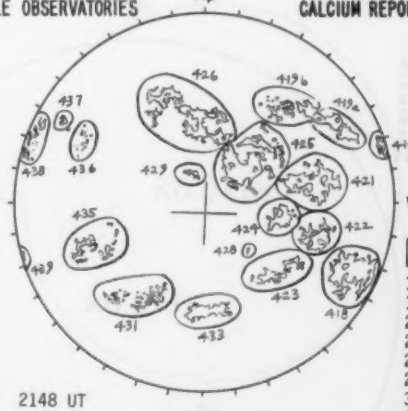


E W

PROMINENCES

1450 UT Sp 1533 UT

HALE OBSERVATORIES Np CALCIUM REPORT

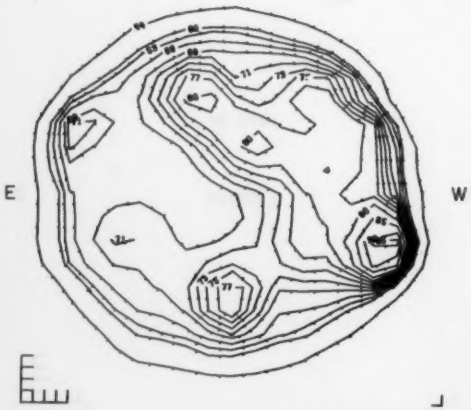


E W

2148 UT Sp

POOR	M
18- 9000-4.0	
19a- 3500-3.0	
21- 4500-3.0	
22- 1800-2.5	
25- 5300-3.0	
26- 5500-3.0	
33- 1900-3.5	
39- 0500-4.0	

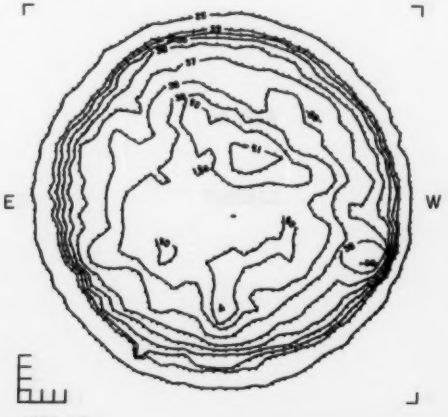
NOSC LA POSTA Np 2.0 CM



E W

1653 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



E W

1559 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

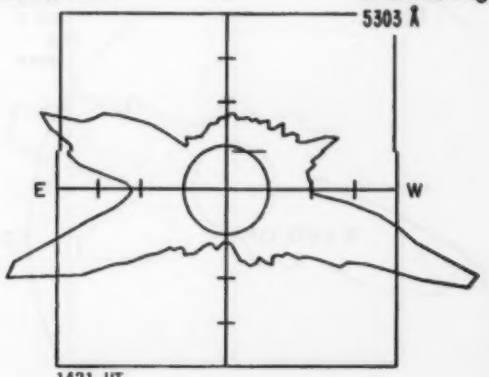
Sp

79

Nov 79

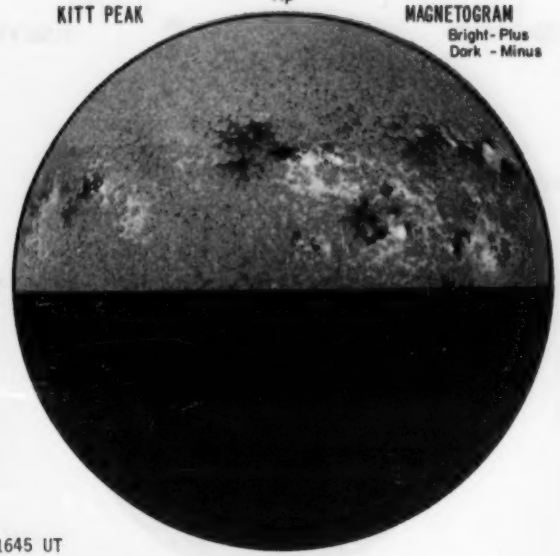
NOVEMBER 17, 1979 (P = 21.04, B_o = 2.64, L_o = 178.13)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1421 UT
Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1645 UT
Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =

Sp

17

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

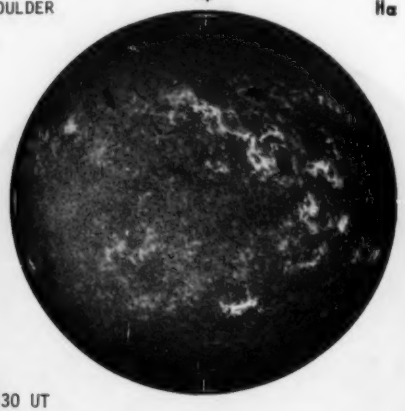
Sp

17

BOULDER

Np

Hα



E

W

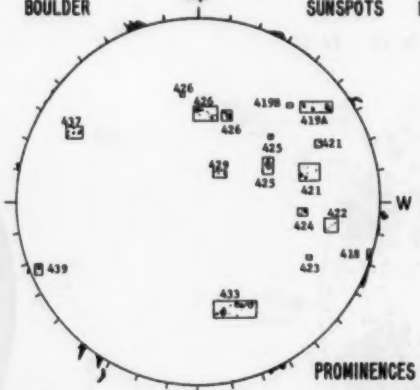
1530 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1550 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT

NO DATA

E

W

PROMINENCES

1530 UT

Sp

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

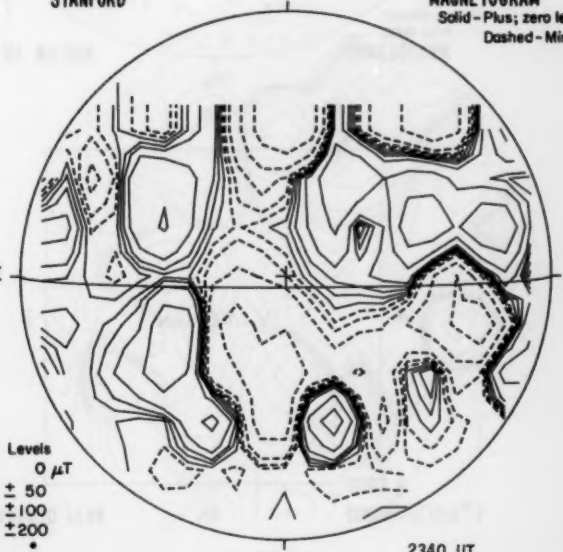
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

2340 UT

Sp

NOVEMBER 18, 1979 (P = 20.75, B_o = 2.53, L_o = 164.95)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E — W

1546 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.8

E — W

Levels
± 5
± 10
± 20
± 40
± 80

16.79 - 17.82 UT

Sp

18

BIG BEAR

Np

Hα

BOULDER

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

Sp

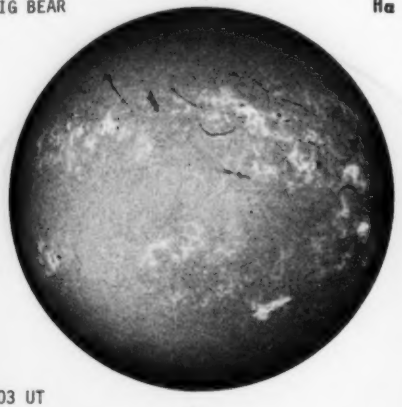
Sp

18

BIG BEAR

Np

Hα



E

W

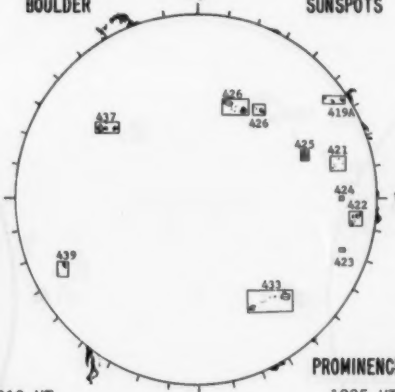
1903 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

PROMINENCES

1910 UT

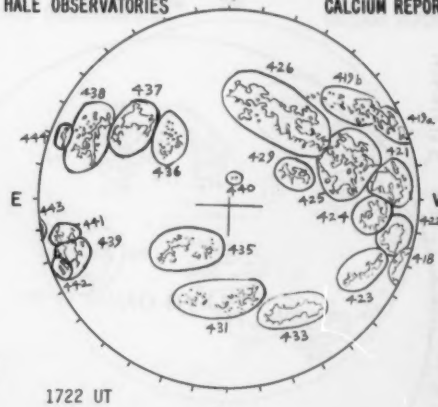
1925 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1722 UT

Sp

GOOD	M
18- 5000-3.5	
19a-3600-3.0	
19b-2500-2.5	
21- 4800-3.0	
22- 2800-2.5	
25- 5700-2.5	
26- 6200-3.5	
33- 2800-3.5	
37- 2000-3.0	
39- 1500-3.5	
41- 0600-3.5	
42- 0600-3.0	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

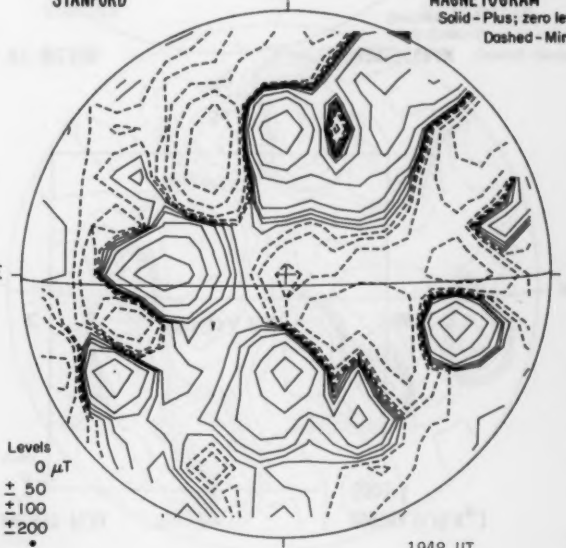
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1948 UT

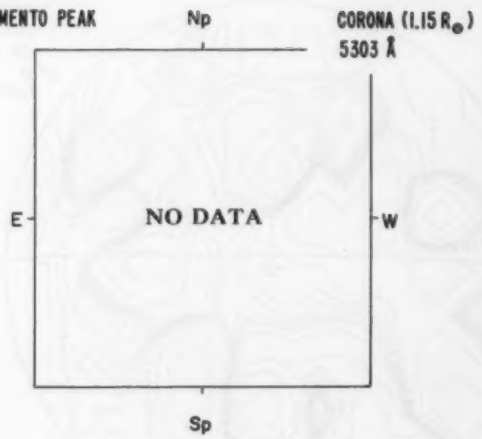
Sp

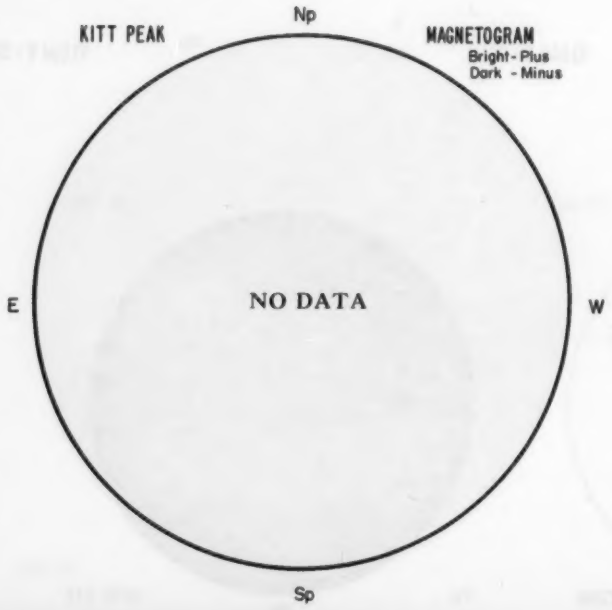
83

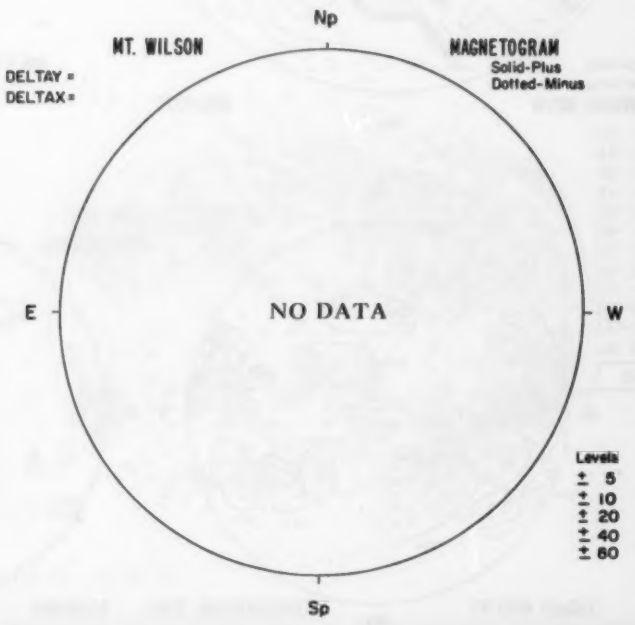
Nov 79

NOVEMBER 19, 1979 (P = 20.45, B_o = 2.41, L_o = 151.77)

SACRAMENTO PEAK







19

BOULDER

Hα

BOULDER

SUNSPOTS

HALE OBSERVATORIES

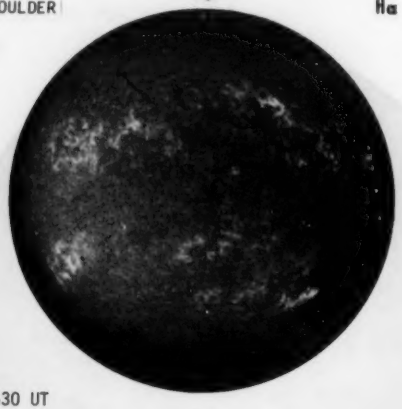
CALCIUM REPORT

19

BOULDER

Np

Hα



E W

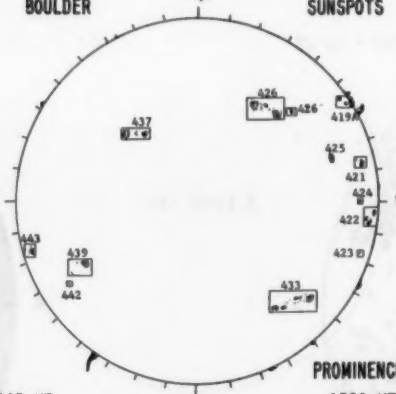
Sp

1530 UT

BOULDER

Np

SUNSPOTS



E W

Sp

1445 UT

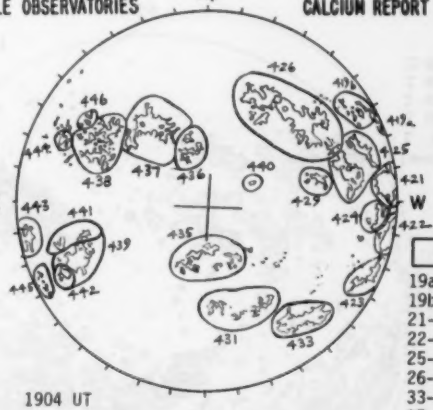
PROMINENCES

1530 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

Sp

1904 UT

FAIR	M
19a-1100-3.0	
19b-1800-3.0	
21- 4800-3.0	
22- 2800-2.5	
25- 4800-2.5	
26- 6400-3.5	
33- 3400-3.5	
37- 3000-3.0	
39- 2500-3.0	
43- 2700-2.5	

NOSC LA POSTA

Np

2.0 CM

NO DATA

EQUIPMENT

E W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

EQUIPMENT

E W

---- UT

Sp

Ant. Temp. Unit 100° K

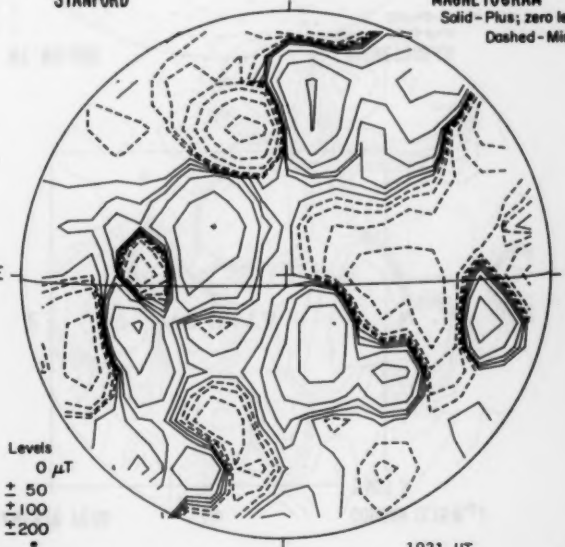
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

1931 UT

85

Nov 79

NOVEMBER 20, 1979 (P = 20.15, B_o = 2.29, L_o = 138.59)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1736 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5

E W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

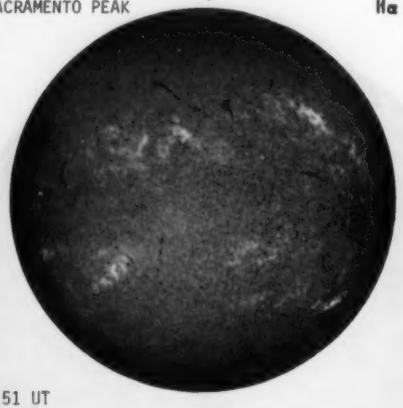
22.43 - 23.91 UT

Sp

20
SACRAMENTO PEAK Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

20

SACRAMENTO PEAK Np Hα



E W

2151 UT

Sp

BOULDER Np SUNSPOTS

NO DATA

E W

PROMINENCES

Sp

HALE OBSERVATORIES Np CALCIUM REPORT

NO DATA

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

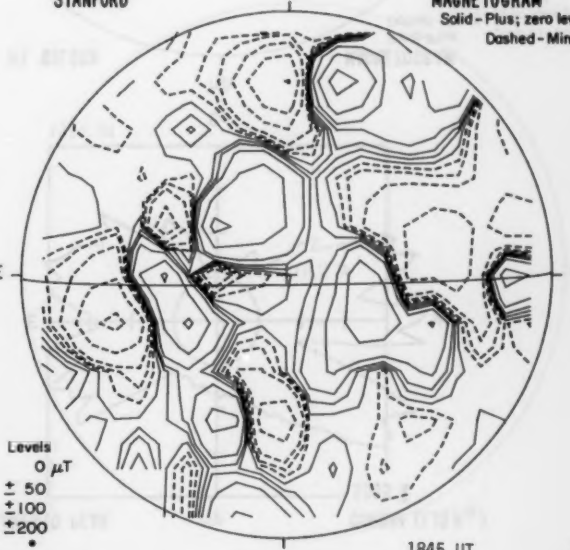
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

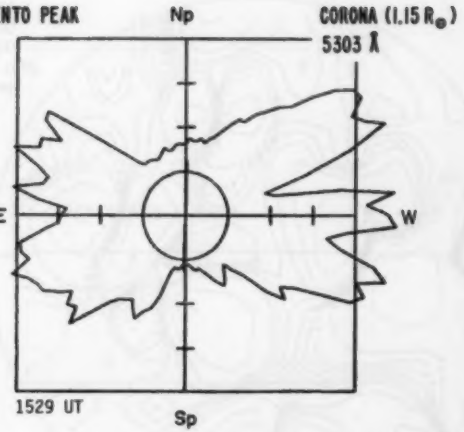
±200

1845 UT

Sp

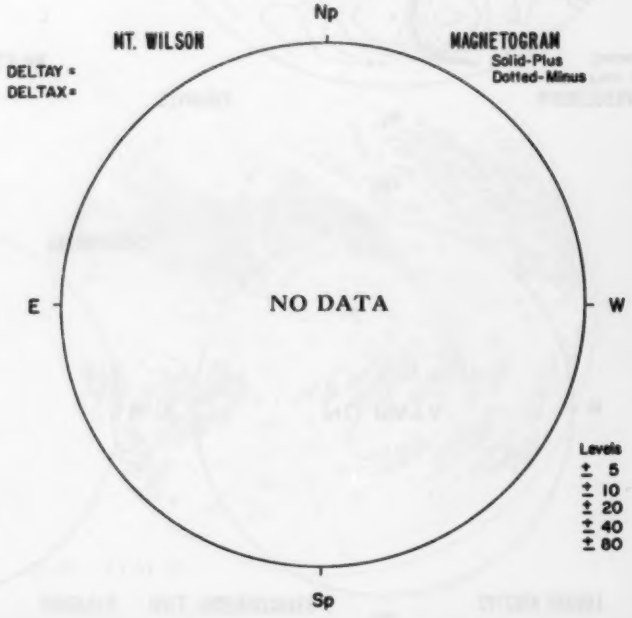
NOVEMBER 21, 1979 (P = 19.84, B_o = 2.16, L_o = 125.41)

SACRAMENTO PEAK



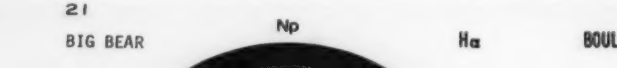
KITT PEAK

NT. WILSON



21

BIG BEAR



Hα

BOULDER

SUNSPOTS

HALE OBSERVATORIES

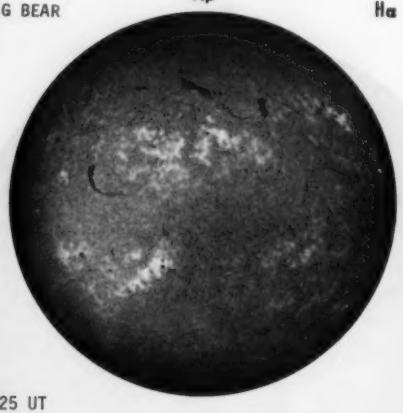
CALCIUM REPORT

21

BIG BEAR

Np

Hα



E W

1825 UT

Sp

BOULDER

Np

SUNSPOTS

NO DATA

E W

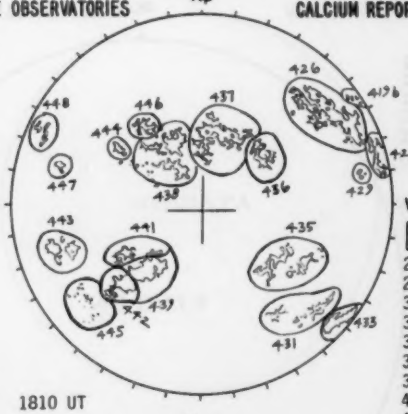
Sp

PROMINENCES

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

1810 UT

Sp

FAIR	M
25- 1200-2.5	
26- 4400-3.5	
33- 2300-3.5	
36- 0700-2.5	
37- 2500-3.5	
38- 2500-2.5	
39- 2400-3.5	
41- 1000-2.5	
42- 1400-3.5	
43- 1500-3.0	
44- 0400-2.5	
47- 0300-3.0	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E W

EQUIPMENT

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E W

EQUIPMENT

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E W

Levels

0 μT

± 50

±100

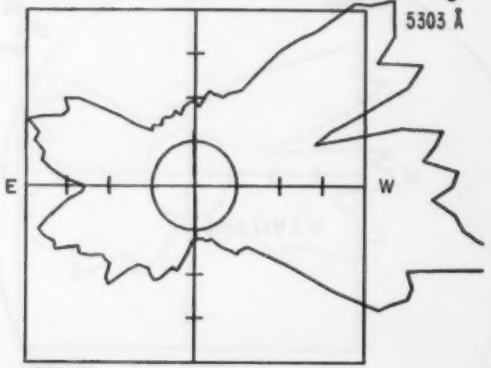
±200

Sp

NOV 79

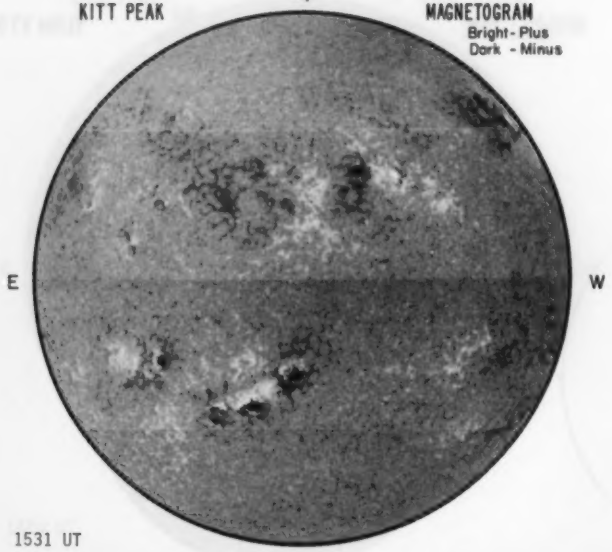
NOVEMBER 22, 1979 (P = 19.52, B_o = 2.04, L_o = 112.23)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



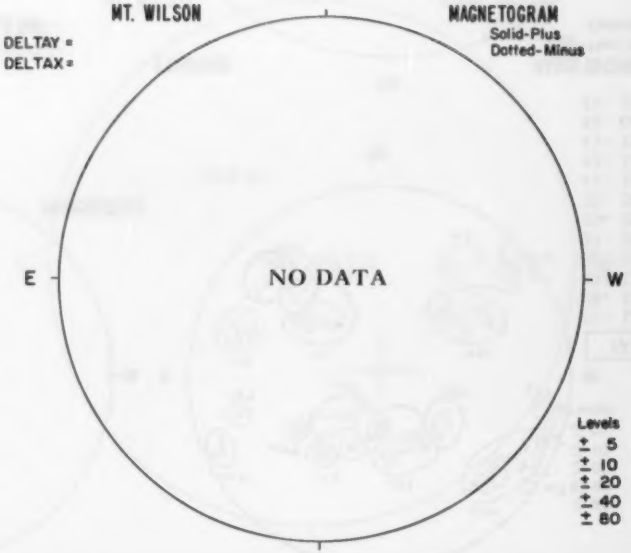
1602 UT
Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1531 UT
Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =



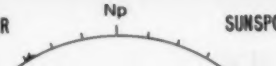
Levels
± 5
± 10
± 20
± 40
± 80

Sp

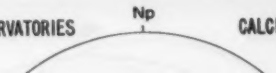
22

BOULDER Np Hα

BOULDER Np SUNSPOTS



HALE OBSERVATORIES Np CALCIUM REPORT



Sp

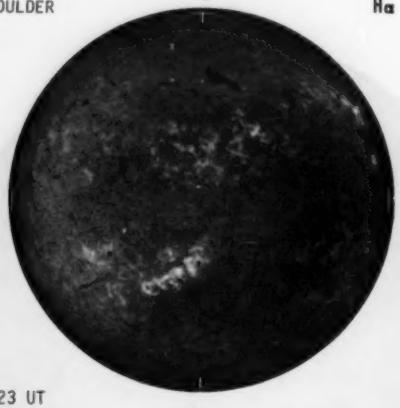
Sp

22

BOULDER

Np

Hα



E W

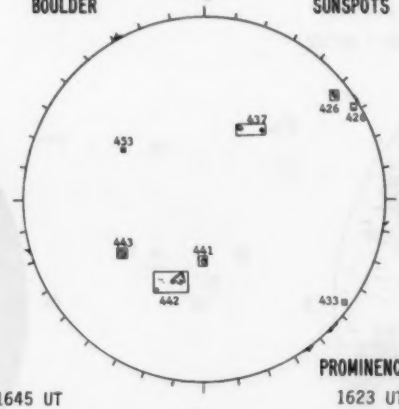
1623 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1645 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT

E W

Sp

PROMINENCES

1623 UT

NOSC LA POSTA

Np

2.0 CM

NO DATA

E W

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E W

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

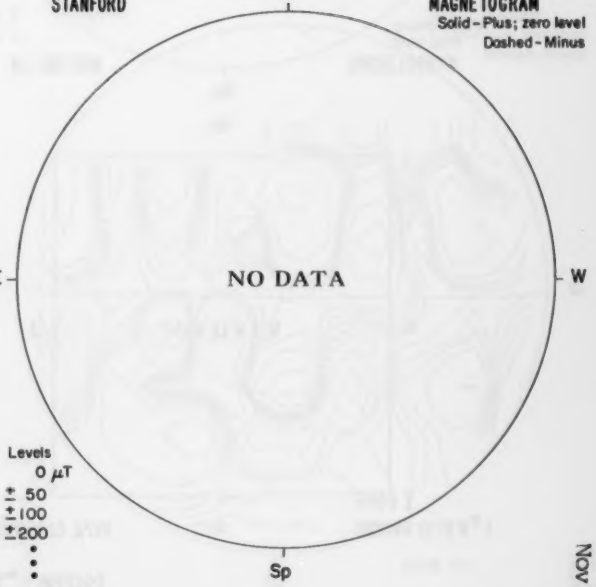
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Sp

Levels

0 μT

± 50

±100

±200

•

•

•

NOVEMBER 23, 1979 (P = 19.19, B_o = 1.92, L_o = 99.05)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

2123 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.8

E W

Levels
5
10
20
40
80

22.18 - 23.13 UT

Sp

23

BOULDER Np Hα

BOULDER Np

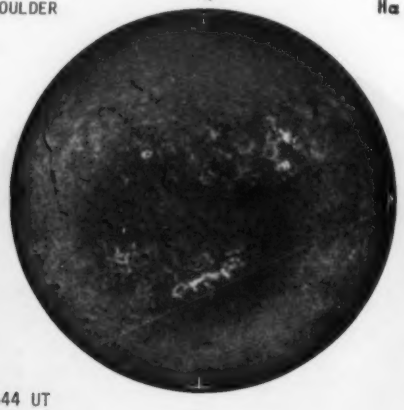
SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

23

BOULDER Np Hα

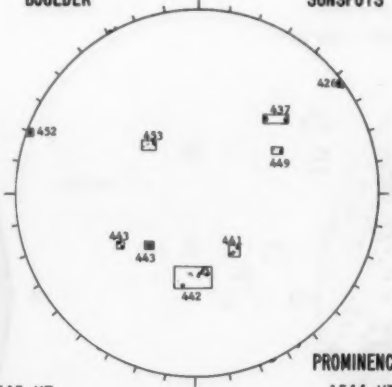


E W

1544 UT

Sp

BOULDER Np SUNSPOTS



E W

1545 UT

Sp

PROMINENCES

1544 UT

HALE OBSERVATORIES Np CALCIUM REPORT

NO DATA

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E EQUIPMENT W

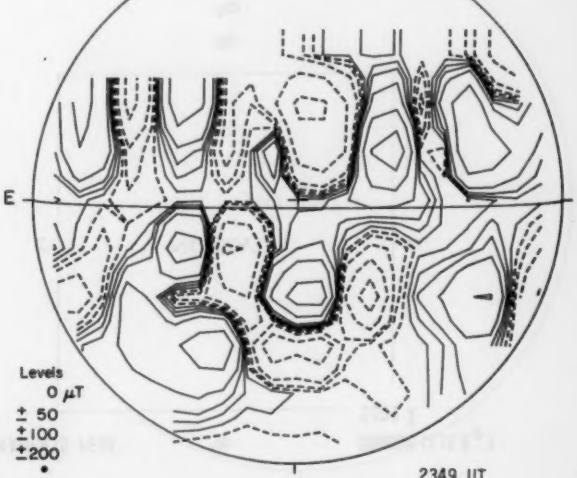
---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

2349 UT

Sp

93

Nov 79

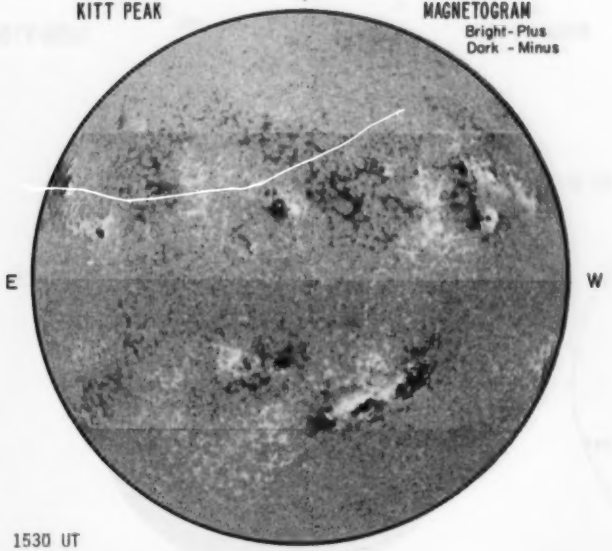
NOVEMBER 24, 1979 (P = 18.86, B_o = 1.80, L_o = 85.87)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



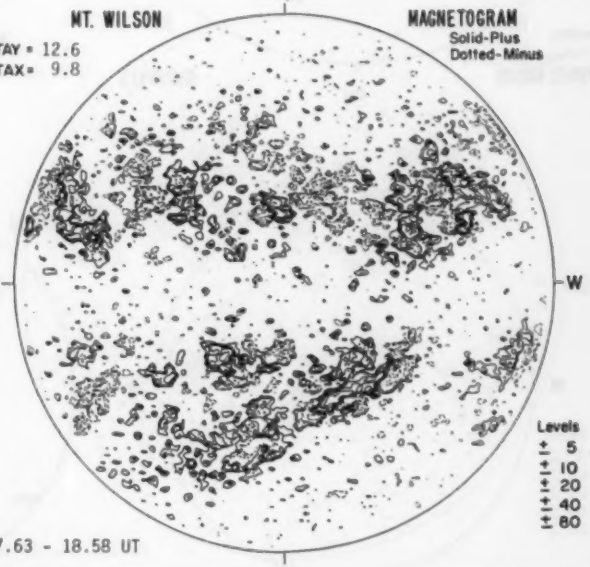
E W

1530 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.8



E W

Levels
± 5
± 10
± 20
± 40
± 80

17.63 - 18.58 UT

Sp

24

BIG BEAR Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

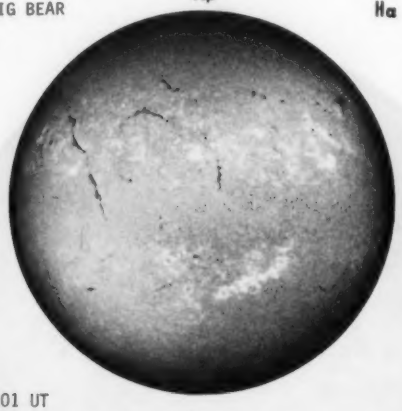
Sp

24

BIG BEAR

Np

Hα



E W

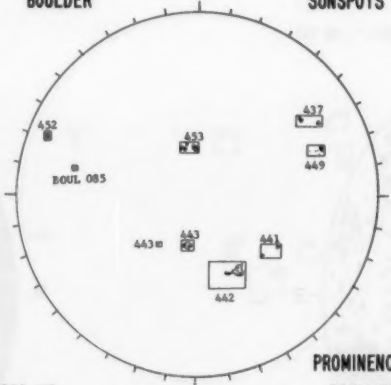
2001 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1610 UT

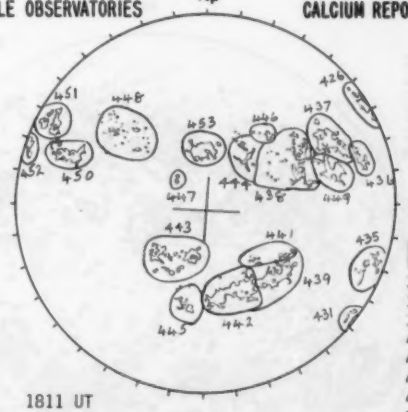
Sp

PROMINENCES

1900 UT

HALE OBSERVATORIES

Np



E W

1811 UT

Sp

CALCIUM REPORT

FAIR	M
37-	2400-3.5
38-	2800-2.5
39-	2000-3.0
42-	3000-3.5
43-	1100-2.5
46-	0300-2.5
49-	1500-2.5
50-	1700-3.5
51-	1600-2.5
53-	1400-3.5

NOSC LA POSTA

Np

2.0 CM

NO DATA

E SCHEDULE W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E SCHEDULE W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E W

Levels

0 μT

± 50

±100

±200

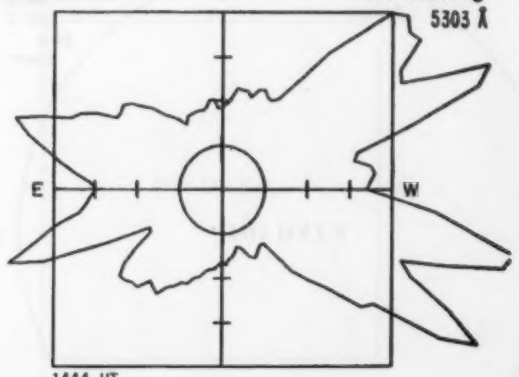
Sp

95

Nov 79

NOVEMBER 25, 1979 (P = 18.52, B_o = 1.67, L_o = 72.69)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1444 UT

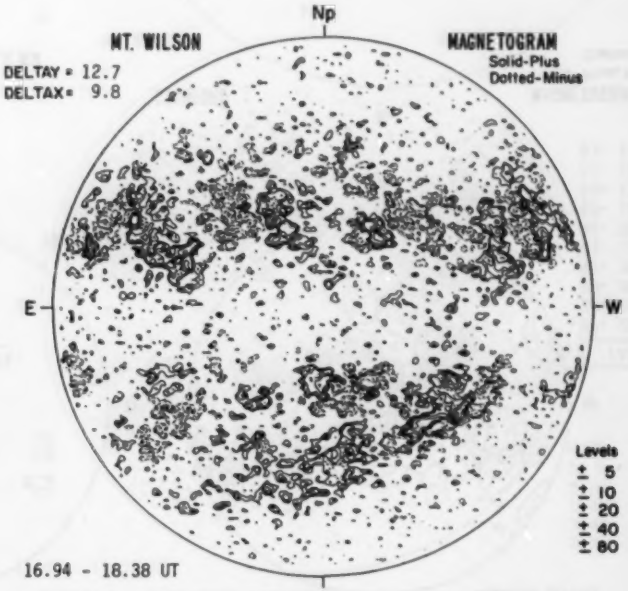
Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

1518 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.8



16.94 - 18.38 UT

Sp

25

BIG BEAR Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

Sp

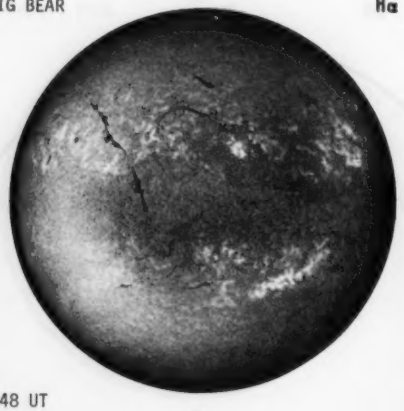
Sp

25

BIG BEAR

Np

Hα



E W

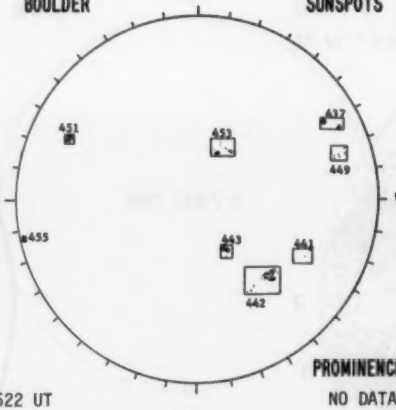
1948 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1522 UT

Sp

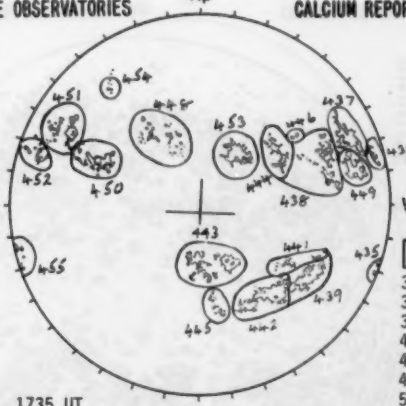
PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

1735 UT

Sp

GOOD	M
37- 1900-3.0	
38- 1800-2.5	
39- 2100-3.0	
42- 3200-3.5	
43- 1600-2.5	
49- 1500-3.0	
50- 1500-3.0	
51- 1800-2.5	
53- 1700-3.5	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E SCHEDULE W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E SCHEDULE W

---- UT

Sp

Ant. Temp. Unit 100° K

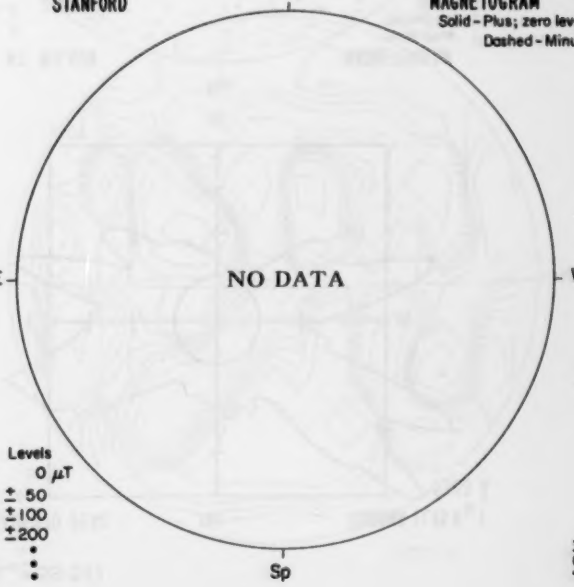
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

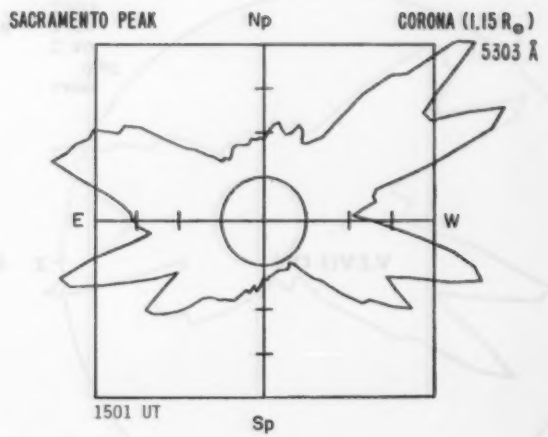
±100

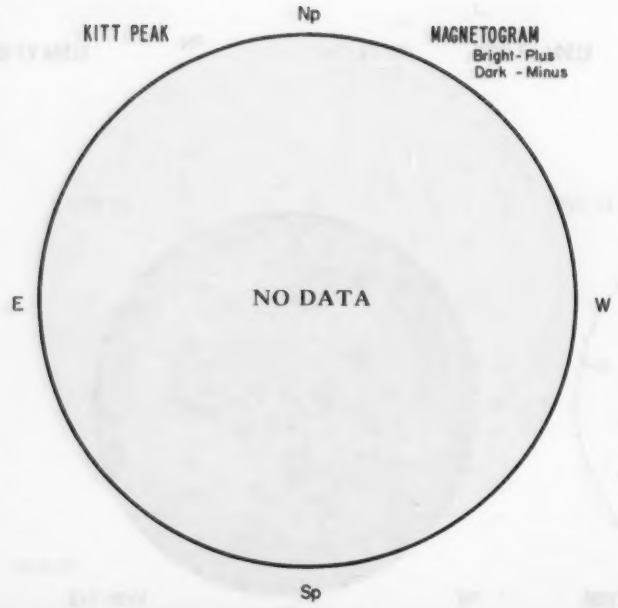
±200

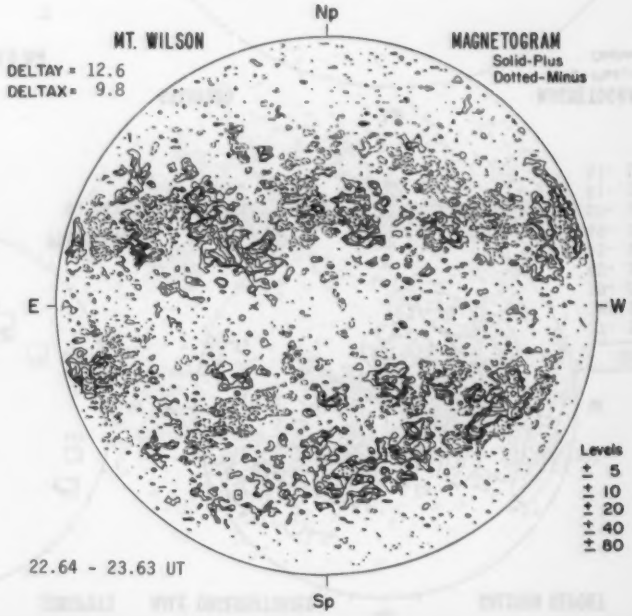
97

Nov 79

NOVEMBER 26, 1979 (P = 18.17, B_o = 1.55, L_o = 59.51)







26

SACRAMENTO PEAK Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

SACRAMENTO PEAK Np Hα

E W

1501 UT

Sp

BOULDER Np SUNSPOTS

NO DATA

E W

PROMINENCES

Sp

HALE OBSERVATORIES Np CALCIUM REPORT

NO DATA

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

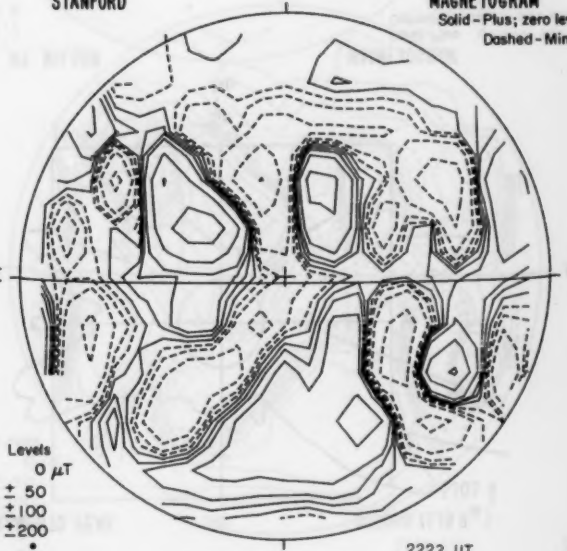
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

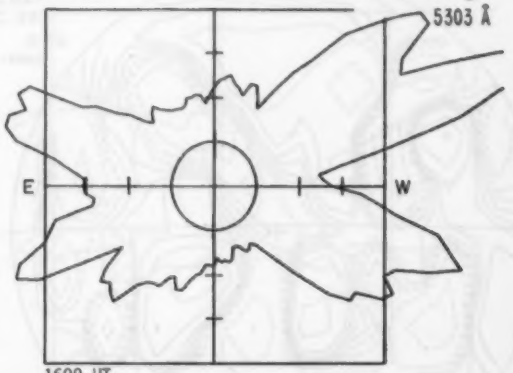
±200

2223 UT

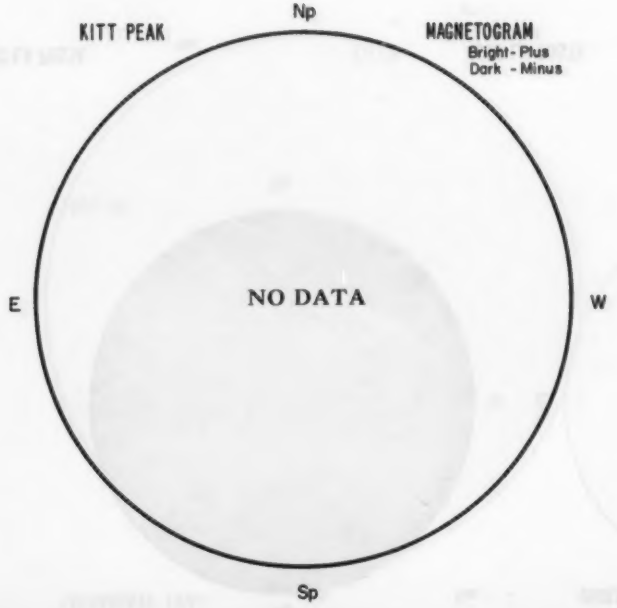
Sp

NOVEMBER 27, 1979 (P=17.82, B_o=1.42, L_o=46.33)

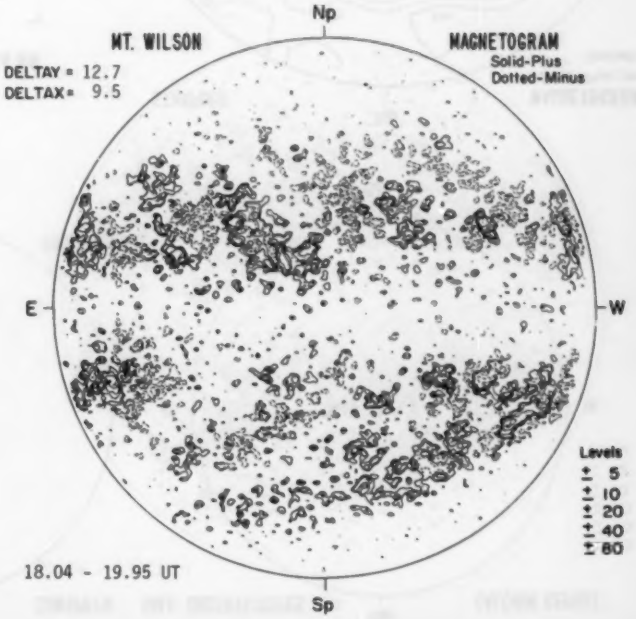
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



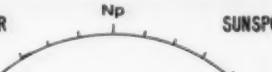
MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5



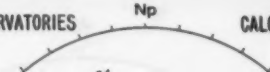
18.04 - 19.95 UT

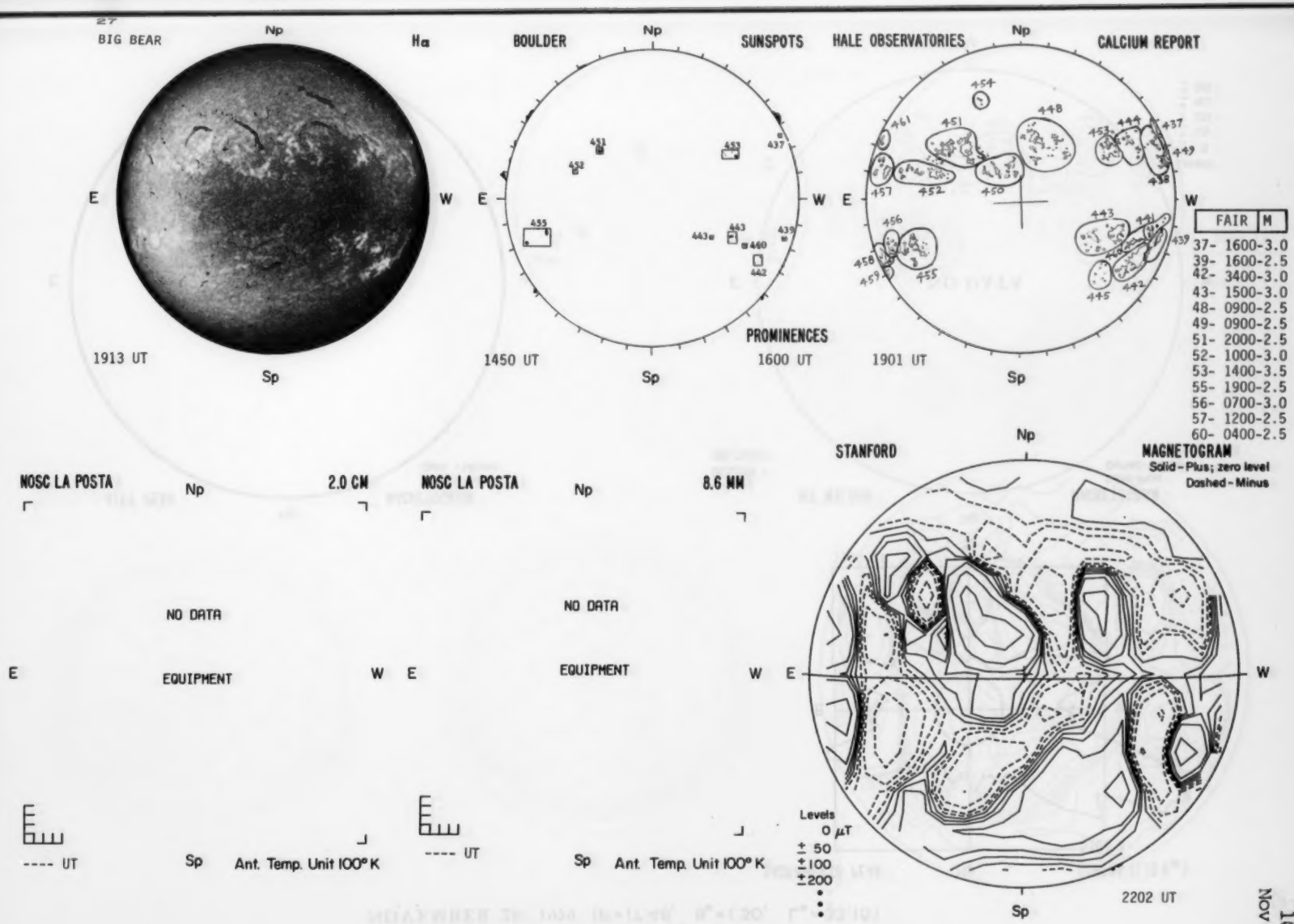
27
BIG BEAR Np Hα

BOULDER Np SUNSPOTS



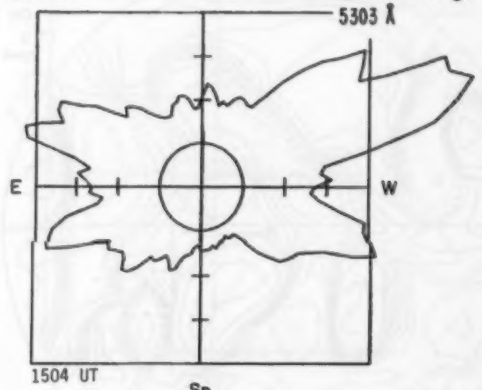
HALE OBSERVATORIES Np CALCIUM REPORT



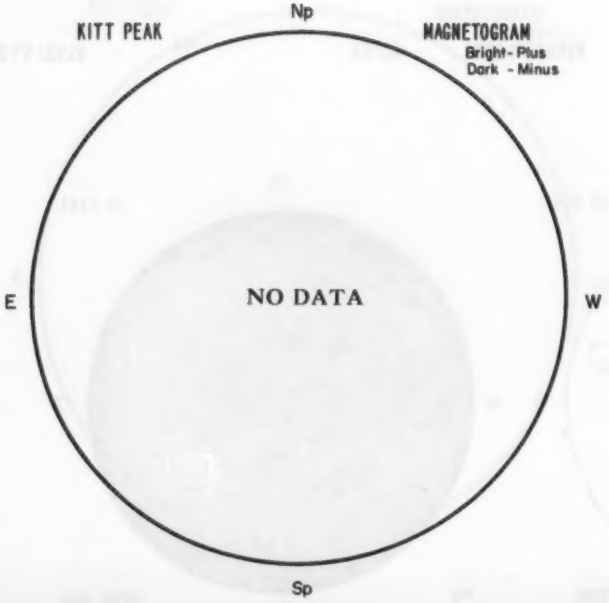

27
BIG BEAR
Np
Hα
E
W
1913 UT
Sp
BOULDER
SUNSPOTS
PROMINENCES
1450 UT
1600 UT
HALE OBSERVATORIES
CALCIUM REPORT
1901 UT
FAIR M
37- 1600-3.0
39- 1600-2.5
42- 3400-3.0
43- 1500-3.0
48- 0900-2.5
49- 0900-2.5
51- 2000-2.5
52- 1000-3.0
53- 1400-3.5
55- 1900-2.5
56- 0700-3.0
57- 1200-2.5
60- 0400-2.5
NOSC LA POSTA
2.0 CM
NO DATA
EQUIPMENT
---- UT
Ant. Temp. Unit 100° K
NOSC LA POSTA
8.6 MM
STANFORD
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
Levels
0 μT
± 50
±100
±200
2202 UT

NOVEMBER 28, 1979 (P = 17.46, B_o = 1.30, L_o = 33.15)

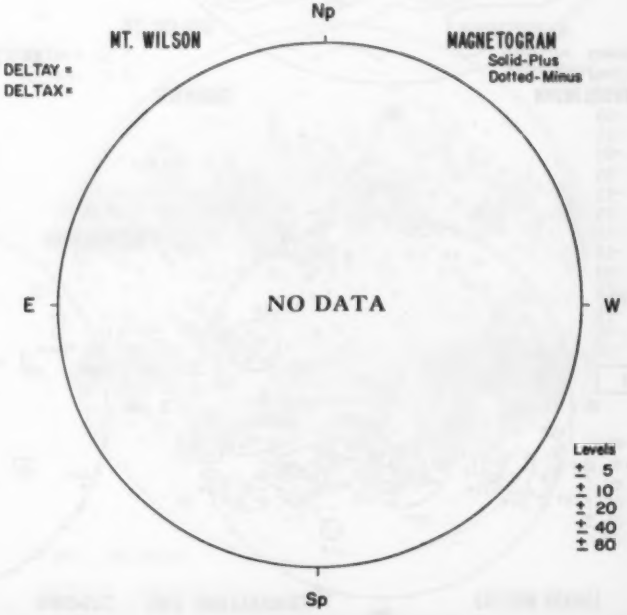
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =



28
BIG BEAR Np Hα

BOULDER Np SUNSPOTS

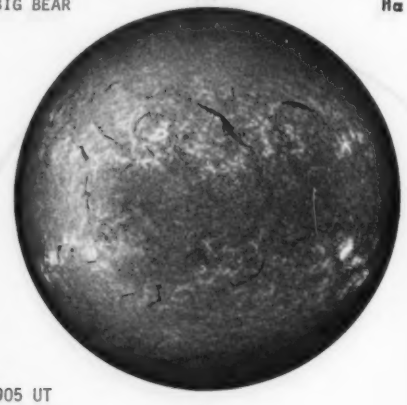
HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

28

BIG BEAR Np Hα

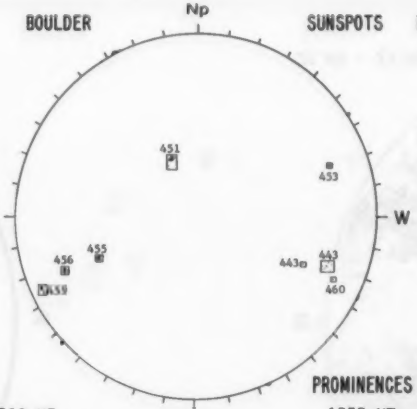


E W

1905 UT

Sp

BOULDER Np SUNSPOTS



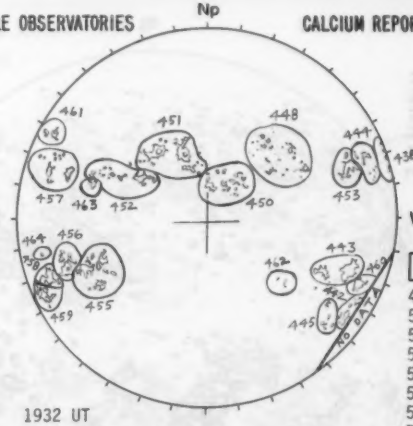
E W

PROMINENCES

1500 UT 1555 UT

Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1932 UT

Sp

POOR	M

43- 1700-3.0
51- 2000-2.5
53- 1400-3.0
55- 1700-2.5
56- 0900-3.0
57- 1000-2.5
58- 1300-3.0
59- 1000-3.0
60- 0600-2.5
63- 0200-2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

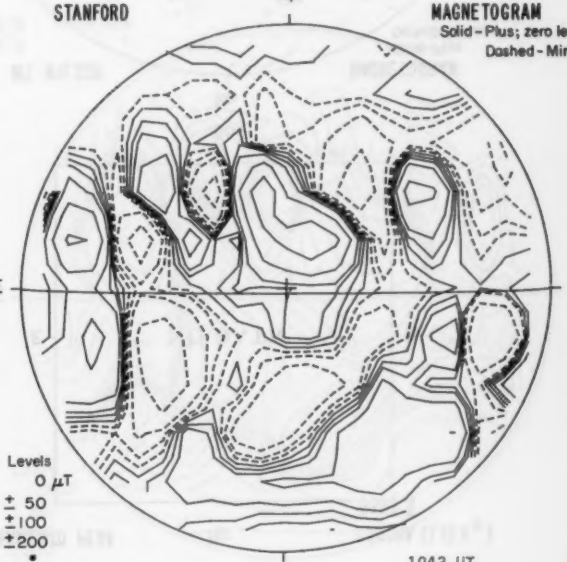
NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



E W

Levels
0 μT
± 50
±100
±200

1943 UT

Sp

103
Nov 79

NOVEMBER 29, 1979 (P=17.10, B_o=1.17, L_o=19.97)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.8

E W

Levels
± 5
± 10
± 20
± 40
± 80

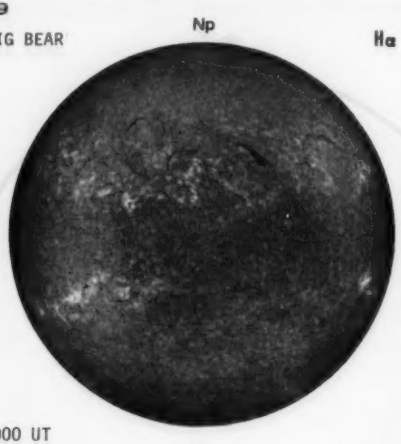
22.60 - 23.55 UT

Sp

29
BIG BEAR Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

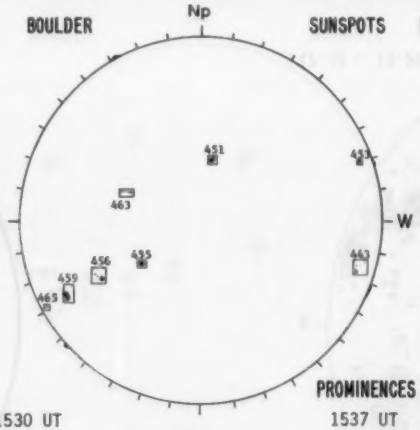
29

BIG BEAR Hα



2000 UT

BOULDER SUNSPOTS

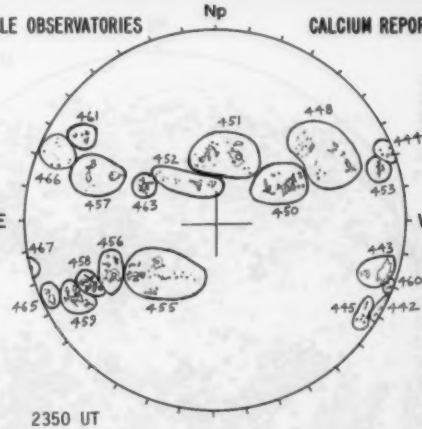


1530 UT

PROMINENCES

1537 UT

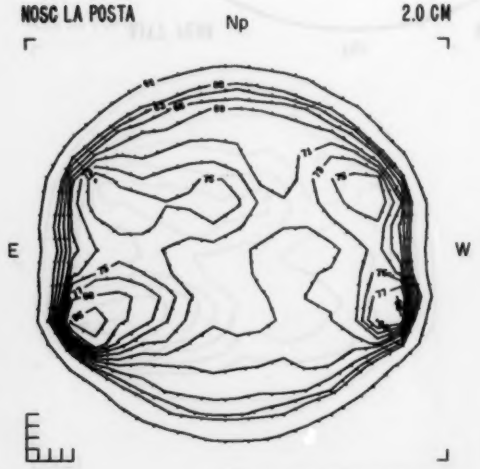
HALE OBSERVATORIES CALCIUM REPORT



2350 UT

POOR	M
43-	2300-3.0
53-	0600-2.5
55-	1500-2.5
56-	0900-2.5
57-	1000-2.5
58-	1000-2.5
59-	1300-2.5
60-	0400-2.5
61-	0400-2.5
63-	0500-2.5
65-	0700-2.5
67-	0200-3.5

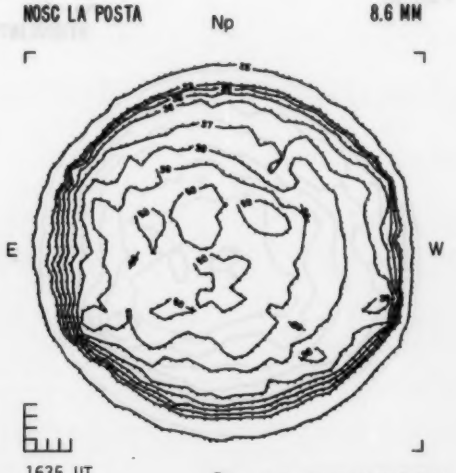
NOSC LA POSTA 2.0 CM



1733 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

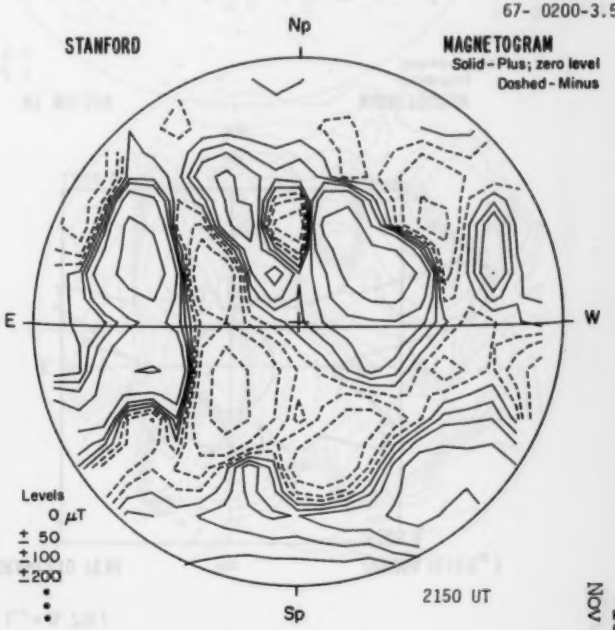


1635 UT

Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

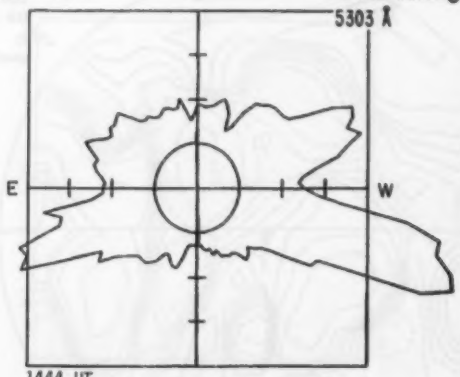


2150 UT

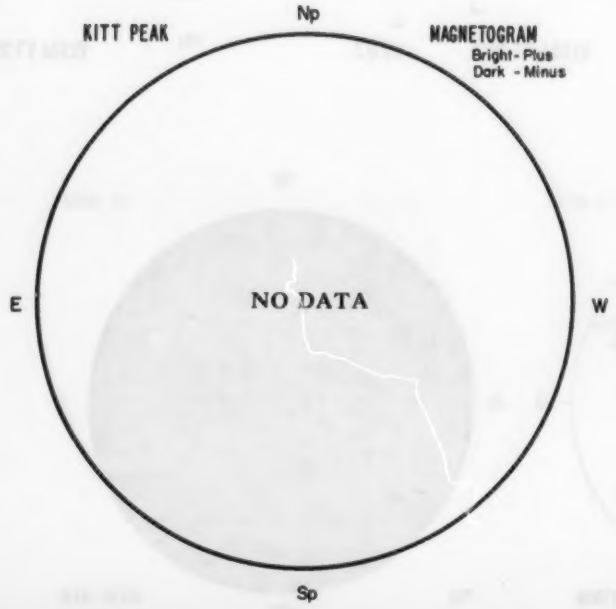
105
Nov 79

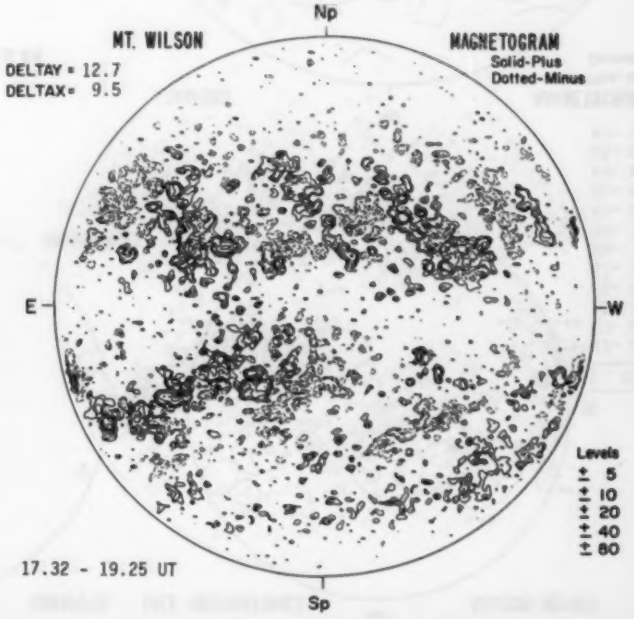
NOVEMBER 30, 1979 (P = 16.72, B_o = 1.04, L_o = 6.79)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1444 UT





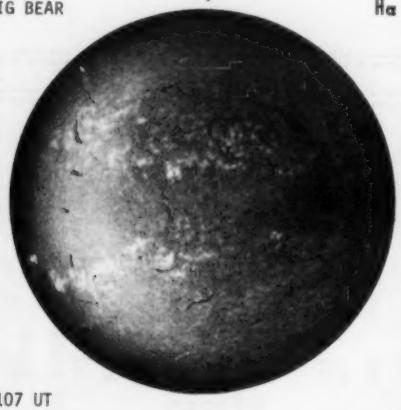
17.32 - 19.25 UT

30

BIG BEAR Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

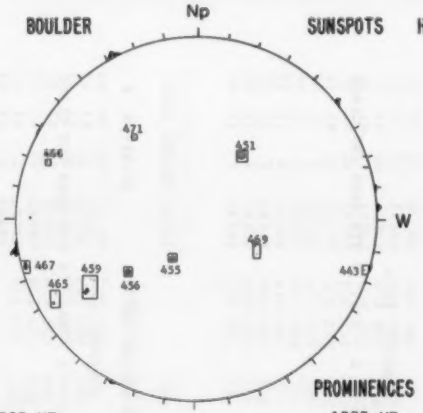
30

BIG BEAR Hα



2107 UT

BOULDER SUNSPOTS

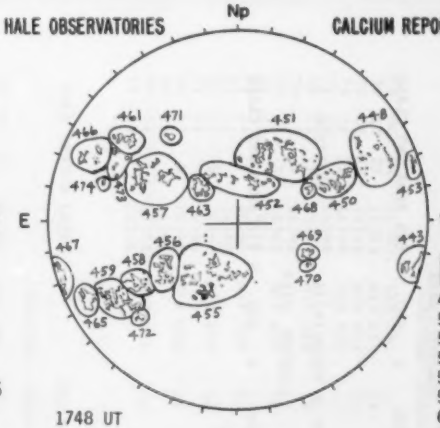


1525 UT

PROMINENCES

1555 UT

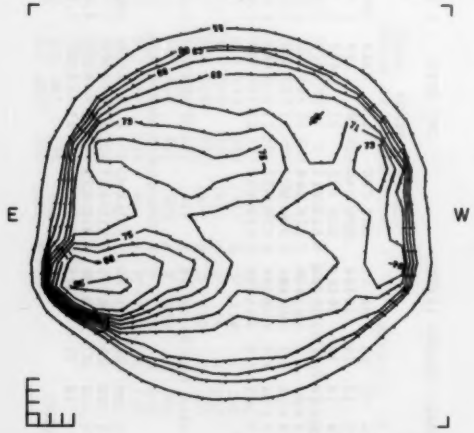
HALE OBSERVATORIES CALCIUM REPORT



FAIR	M
43- 3000-3.0	
55- 1600-2.5	
56- 1000-3.0	
57- 1500-3.0	
58- 1300-3.0	
59- 2400-2.5	
61- 0600-2.5	
63- 0600-3.0	
65- 1300-3.0	
67- 1800-3.5	
69- 0300-2.5	

1748 UT

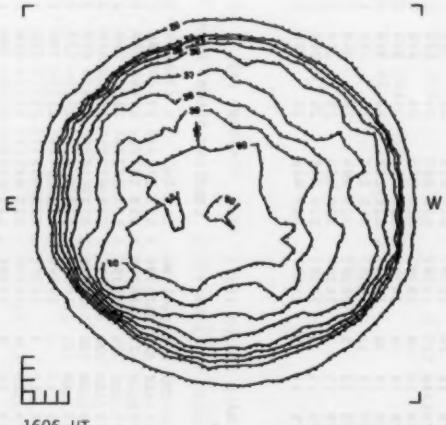
NOSC LA POSTA 2.0 CM



1704 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

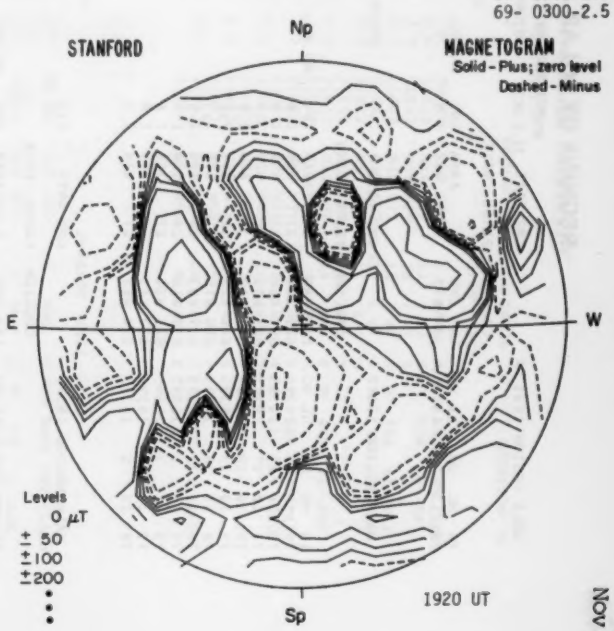


1606 UT

Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1920 UT

107
Nov 79

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1979

HALE REGION 1641 A — CMP DATE 31.0 OCT. — RETURN OF PART OF REGION 16357 — ROTATIONS 3 AND 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	5	16414 A	S05 W75	41	400	1 5									

HALE REGION 16395 — CMP DATE 1.0 — RETURN OF PART OF REGION 16334 — ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	25	16395	S27 E81	31	400	1 0									
79	10	26	16395	S27 E68	31	600	2 0									
79	10	27	16395	S27 E55	30	600	2.0									
79	10	28	16395	S27 E41	30	600	2.0									
79	10	29	16395	S26 E29	30	800	2.0									
79	10	30	16395	S26 E15	31	500	1.5									
79	10	31	16395	S27 E03	30	400	1.5									
79	11	1	16395	S27 W10	28	300	1 0									
79	11	3	16395	S27 W34	27	300	1 0									
79	11	4	16395	S27 W47	27	300	1 0									
79	11	5	16395	S28 W61	27	200	1 0									

HALE REGION 16397 — CMP DATE 1.2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	26	16397	S17 E74	25	800	2.0									
79	10	27	16397	S18 E61	24	600	2.0									
79	10	28	16397	S18 E47	24	800	2.0									
79	10	29	16397	S18 E34	25	500	2.0									
79	10	30	16397	S18 E20	26	300	2.0									
79	10	31	16397	S19 E07	26	300	1 5									
79	11	1	16397	S19 W08	26	300	1.5									
79	11	3	16397	S20 W33	26	200	1.5									
79	11	4	16397	S20 W46	26	200	1 0									
79	11	5	16397	S20 W60	26	100	1 0									

HALE REGION 16396 — CMP DATE 1 3 — RETURN OF REGION 16355 — ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	26	16396	S13 E70	29	1000	2.0									
79	10	27	16396	S13 E57	28	700	2.0									
79	10	28	16396	S12 E43	28	800	2.0									
79	10	29	16396	S12 E32	27	800	2.0									
79	10	30	16396	S12 E18	28	600	2.0									
79	10	31	16396	S12 E06	27	600	2.0									
79	11	1	16396	S12 W07	25	700	1.5									
79	11	3	16396	S12 W32	25	700	1 5									
79	11	4	16396	S12 W45	25	500	1.0									
79	11	5	16396	S13 W59	25	500	1.0									

HALE REGION 16404 — CMP DATE 1.8

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	29	16404	S25 E48	19	100	1 0		S27 E38				H	20	3	CRO
79	10	30	16404	S26 E25	21	400	2.5	21018	S29 E27	20	(AF)	3	R	40	6	BXO
79	10	31	16404	S27 E13	20	400	2.0	21018	S29 E15	19	(B)	3	H	10	3	BXO
79	11	1	16404	S28 E00	18	600	2.0	21018	S29 E01	19	(B)	2	R	10	2	BXO
79	11	3	16404	S29 W24	17	500	2.0									
79	11	4	16404	S29 W37	17	400	1.5									
79	11	5	16404	S29 W51	17	300	1.0									

HALE REGION 16398 — CMP DATE 2.4 — RETURN OF REGION 16336 — ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	26	16398	N15 E87	12	3500	3 5	21012	N18 E80	19	(X)	3				
79	10	27	16398	N15 E74	11	4500	4.0	21012	N18 E73	13	(B)	4	H	570	17	EHI
79	10	28	16398	N17 E60	11	5800	3.5	21012	N17 E61	12	(BY)	4	H	780	22	FHI

CONTD

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1979

HALE REGION 16398 (CONT) CMP DATE 2 4 RETURN OF REGION 16336 ROTATION 5

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	29	16398	N17 E47	12	5800	3.5	21012	N18 E49	11	(B)	4	M	820	26	EKI
79	10	30	16398	N16 E34	12	5500	3 5	21012	N18 E35	12	(B)	5				
79	10	31	16398	N16 E21	12	5500	3 5	21012	N18 E22	12	(B)	5	H	740	41	FHI
79	10		16398					21024	N13 E37	358	(B)	3	H	10	3	BXO
79	11	1	16398	N16 E08	10	5600	3.5	21012	N17 E09	11	(BP)	5				
79	11	2	16398					21012	N16 W04	10	(BP)	5				
79	11	3	16398	N16 W17	10	6500	3 5	21012	N18 W20	14	BP	4	M	440	23	FHI
79	11		16398					21027	N19 W10	4	BP	3				
79	11	4	16398	N16 W30	10	6500	3.5	21012	N18 W35	17	(AP)	5	R	700	23	FKI
79	11		16398					21027	N19 W25	7	(BP)	4	R	10	4	BXO
79	11	5	16398	N16 W44	10	6500	4.5	21012	N19 W40	16	(AP)	5				
79	11		16398					21027	N20 W39	7	(B)	3	R	620	18	EKI
79	11	6	16398	N17 W60	11	5400	3 5	21012	N19 W60	15	(AP)	4				
79	11		16398					21027	N20 W50	5	(B)	2				
79	11	7	16398	N17 W71	11	4800	3.5	21012	N20 W79	20	AP	3	M	250	1	HHX
79	11		16398					21027	N23 W63	4	AP	2				

HALE REGION 16399 CMP DATE 3.8

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	27	16399	N28 E90	356	300	2.0									
79	10	28	16399	N30 E82	350	2300	3.0	21016	N26 E72	1	(AP)	2	M	10	1	AXX
79	10	29	16399	N29 E68	352	2500	3 0		N27 E58				M	10	2	BXO
79	10	30	16399	N28 E54	353	2200	2.5									
79	10	31	16399	N28 E40	354	2500	2.0		N25 E34				H	0	1	AXX
79	11	1	16399	N27 E27	352	2300	2 5									
79	11	3	16399	N27 E02	352	2300	2 5	21028	N26 W04	359	AP	1				
79	11	4	16399	N26 W11	351	2300	2.5	21031	N28 W11	353	(AP)	2				
79	11	5	16399	N26 W24	350	2000	4.5									
79	11	6	16399	N25 W39	350	1700	2.0									
79	11	7	16399	N26 W51	351	1100	2 0									

HALE REGION 16402 CMP DATE 4.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	28	16402	N13 E90	342	100	3.5									
79	10	29	16402	N13 E80	340	2500	3.5		N12 E71				H	90	5	DSO
79	10	30	16402	N12 E65	342	2100	3 5	21019	N10 E62	346	(B)	4	R	340	8	DAO
79	10	31	16402	N12 E51	343	2300	3 0	21019	N10 E49	346	(B)	4	H	140	18	DAO
79	11	1	16402	N11 E36	343	2300	3.5	21019	N11 E36	345	(BP)	4	R	260	26	DAO
79	11	2	16402					21019	N11 E22	345	(BP)	3	P	200	40	EAI
79	11	3	16402	N12 E10	344	2400	3.5	21019	N11 E10	345	BY	3	M	60	17	DAO
79	11	4	16402	N13 W05	345	2500	3.0	21019	N11 W05	347	(BY)	4	R	40	32	BXC
79	11		16402					21032	N07 W02	344	(AP)	2				
79	11	5	16402	N13 W19	345	2500	3 0	21019	N12 W19	347	(AP)	2				
79	11		16402					21032	N09 W14	342	(B)	2	R	20	11	BXI
79	11	6	16402	N13 W35	346	2300	2.5	21019	N12 W34	349	(AP)	2				
79	11		16402					21032	N09 W25	340	(AP)	2				
79	11	7	16402	N13 W47	347	2200	2.0									
79	11	9	16402	N13 W74	347	1500	2.5									

HALE REGION 16401 CMP DATE 4.6 RETURN OF REGION 16343 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	28	16401	S11 E90	342	1500	3.5	21017	S12 E86	348	AP	2	M	80	1	HSX
79	10	29	16401	S13 E78	342	3000	3.5	21017	S12 E68	353	(AP)	2	M	190	2	HSX
79	10	30	16401	S14 E64	343	4000	3 0	21017	S12 E56	352	(AP)	4	R	110	4	HAX
79	10		16401					21022	S16 E71	337	AP	2	R	70	3	CSO
79	10	31	16401	S14 E50	344	5000	3.0	21017	S12 E43	352	(AP)	3	H	120	4	CSO
79	10		16401					21022	S15 E58	337	(AP)	4	H	50	4	CSO
79	11	1	16401	S15 E37	342	5200	3 5	21017	S12 E29	352	(AP)	4	R	220	6	DSI
79	11		16401					21022	S15 E45	336	(AP)	4				
79	11	2	16401					21017	S12 E16	351	(AP)	4	P	200	8	DSO
79	11		16401					21022	S15 E32	335	(B)	4	P	80	8	DSO
79	11	3	16401	S15 E12	342	5100	3.5	21017	S12 E04	351	BP	4	M	140	10	CSO
79	11		16401					21022	S15 E18	337	AP	3	M	50	8	CSO
79	11	4	16401	S15 E00	340	4500	3.0	21017	S12 W08	350	(BP)	5	R	300	13	FSO
79	11		16401					21022	S15 E06	336	(AP)	4	R	30	4	CRO
79	11	5	16401	S15 W14	340	4400	3.0	21017	S11 W23	351	(AP)	5				
79	11		16401					21022	S15 W07	335	(AP)	4				
79	11	6	16401	S15 W29	340	3900	2.5	21017	S11 W35	350	(AP)	5				

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HALE REGION 16401 (CONT) CMP DATE 4.6 RETURN OF REGION 16343 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11		16401					21022	S15 W20	335	(AF)	4				
79	11	7	16401	S15 W40	340	4200	2.5	21017	S11 W48	349	AP	5	M	190	2	FSO
79	11		16401					21022	S14 W35	336	AF	3				
79	11	8	16401					21017	S11 W60	348	(AP)	3	R	90	2	FSO
79	11		16401					21022	S14 W46	334	(AF)	2				
79	11	9	16401	S16 W68	341	3500	1 5	21017	S11 W72	347	(AP)	3				
79	11		16401					21022	S14 W60	335	(AF)	3				

HALE REGION 16405 CMP DATE 6.0 RETURN OF REGION 16341 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	30	16405	N25 E79	328	700	1.0									
79	10	31	16405	N26 E66	328	1000	1.5									
79	11	1	16405	N26 E53	326	900	1 5	21020	N24 E51	336	(AP)	4				
79	11	2	16405					21020	N24 E39	328	(AP)	4				
79	11	3	16405	N26 E27	327	900	1.5	21020	N24 E26	329	AP	4	M	140	1	HSX
79	11	4	16405	N27 E15	325	1100	1.5	21020	N25 E14	328	(AP)	5	R	120	1	HSX
79	11	5	16405	N27 E03	323	900	1.5	21020	N25 E01	327	(AP)	4	R	150	1	HSX
79	11	6	16405	N26 W11	322	1200	1 5	21020	N24 W12	327	(AP)	5				
79	11	7	16405	N26 W22	322	1400	1.5	21020	N24 W27	328	BP	5	M	180	2	CSO
79	11	8	16405					21020	N24 W36	324	(AP)	4	R	100	1	HSX
79	11	9	16405	N26 W48	321	1000	1.5	21020	N24 W49	324	(AP)	4	M	130	2	CSO
79	11	10	16405	N26 W63	321	600	1.0	21020	N24 W61	323	(AP)	4	M	170	1	HSX
79	11		16405					21048	N26 W41	303	(AP)	3				
79	11	11	16405	N26 W73	320	400	1.0	21020	N25 W77	325	(AP)	3	R	120	2	HAX
79	11		16405					21048	N26 W56	304	AP	1				

HALE REGION 16411 CMP DATE 6.2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	3	16411	S18 E34	320	100	1.5									

HALE REGION 16406 CMP DATE 6.3 RETURN OF REGION 16344 ROTATIONS 4 AND 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	10	30	16406	N17 E87	320	1400	1 0									
79	10	31	16406	N17 E74	320	3800	2 0	21025	N17 E78	317	(AP)	3	H	0	1	AXX
79	11	1	16406	N17 E60	319	4500	3.0	21021	N13 E56	325	(AP)	4				
79	11	2	16406					21021	N13 E43	324	(AP)	4				
79	11	3	16406	N17 E34	320	5700	3.5	21021	N13 E29	326	AP	3	M	60	1	HSX
79	11	4	16406	N17 E20	320	5500	3 0	21021	N13 E17	325	(AP)	4	R	60	1	HSX
79	11	5	16406	N16 E07	319	6000	3.0	21021	N13 E04	324	(AP)	4	R	60	1	HSX
79	11	6	16406	N16 W08	319	6200	3.5	21021	N14 W09	324	(AP)	5				
79	11	7	16406	N16 W19	319	5800	3.0	21021	N14 W25	326	AP	4	M	190	17	DAO
79	11	8	16406					21021	N14 W36	324	(AP)	4	R	40	1	HSX
79	11	9	16406	N16 W45	318	5500	3.5	21021	N13 W49	324	(AP)	3				
79	11	10	16406	N16 W58	316	4800	3.0	21021	N13 W62	324	(AP)	3	M	40	1	HSX
79	11	11	16406	N17 W67	314	3900	3.0	21021	N13 W79	327	AP	1	R	130	12	EAO
79	11	12	16406	N18 W78	311	3500	3.5									
79	11	13	16406	N18 W90	310	800	3.5									

HALE REGION 16412 CMP DATE 6.8

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	3	16412	S23 E45	309	400	2.5	21029	S25 E45	310	AF	1				
79	11	4	16412	S23 E29	311	600	3.5	21033	S22 E32	310	(AP)	2	R	10	3	BXO
79	11	5	16412	S23 E15	311	700	2.0	21033	S22 E15	313	(BP)	3				
79	11	6	16412	S22 W02	313	1500	3.5	21033	S22 E03	312	(B)	4				
79	11	7	16412	S21 W14	314	2400	3.5	21033	S21 W14	315	BY	5	M	330	21	EAI
79	11	8	16412					21033	S21 W25	313	(BY)	4	R	250	18	FAI
79	11	9	16412	S21 W45	318	3500	3.0	21033	S22 W40	315	(BY)	4	M	20	5	BXO
79	11		16412					21044	S18 W47	322	(BP)	3				
79	11	10	16412	S21 W61	319	3500	3.0	21033	S22 W51	313	(BY)	4	M	340	22	FSI
79	11		16412					21044	S18 W63	325	(B)	3	M	160	1	HSX
79	11	11	16412	S21 W72	319	3500	3.0	21033	S22 W69	317	(BP)	4	R	310	9	CSO
79	11		16412					21044	S17 W75	323	(X)	3	R	60	3	DRO
79	11	12	16412	S25 W85	318	2300	3.5	21033	S21 W75	310	AP	2				

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HALE REGION 16410 CMP DATE 7.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	1	16410	S24 E78	301	600	2.0									
79	11	3	16410	S22 E51	303	500	2.0									
79	11	4	16410	S23 E38	302	600	1.5									
79	11	5	16410	S23 E24	302	600	1.5									
79	11	6	16410	S23 E09	302	800	2.0	21040	S23 E14	301	(B)	3				
79	11	7	16410	S23 E00	300	1100	2.5	21040	S22 E00	301	B	2	M	50	10	DAO
79	11	8	16410					21040	S22 W10	298	(B)	4	R	40	9	DRO
79	11	9	16410	S24 W26	299	1000	2.5	21040	S23 W23	298	(B)	4	M	330	23	EAI
79	11	10	16410	S24 W42	300	1000	2.0	21040	S23 W36	298	(B)	4				
79	11	11	16410	S24 W53	300	1400	2.5	21040	S23 W50	298	(B)	4	R	40	15	CRO
79	11	12	16410	S24 W66	299	1600	2.5	21040	S23 W62	297	(BP)	3				
79	11	13	16410	S24 W80	300	1500	2.0	21040	S22 W75	297	BP	2				

HALE REGION 16408 CMP DATE 7.7 RETURN OF REGION 16350 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	1	16408	N13 E80	299	800	2.0	21025	N17 E62	319	(AP)	3	R	80	3	CSO
79	11	2	16408					21025	N15 E51	316	(BP)	3				
79	11	3	16408	N15 E55	299	1300	2.0	21025	N15 E37	318	B	3	M	90	7	DSO
79	11	4	16408	N15 E41	299	1500	2.0	21025	N15 E24	318	(B)	3	R	40	17	CRI
79	11	5	16408	N14 E27	299	800	2.0	21025	N18 E19	309	(Y)	3				
79	11	6	16408	N14 E10	301	800	2.0	21025	N18 E05	310	(D)	4				
79	11	7	16408	N14 W01	301	1000	2.0	21025	N20 W08	309	BP	4				
79	11	8	16408					21025	N20 W19	307	(B)	4	R	110	20	DAO
79	11	9	16408	N14 W27	300	1000	2.0	21025	N20 W32	307	(B)	4				
79	11		16408					21047	N11 W28	303	B	2				
79	11	10	16408	N14 W43	301	800	1.5	21025	N20 W44	306	(B)	4	M	200	16	DAI
79	11	11	16408	N14 W54	301	800	1.5	21025	N20 W58	306	(B)	4				
79	11		16408					21047	N11 W57	305	AP	1				
79	11	12	16408	N13 W67	300	800	2.0	21025	N21 W69	304	(B)	3				
79	11	13	16408	N12 W80	300	300	1.0	21025	N21 W76	298	AP	2				

HALE REGION 16409 CMP DATE 7.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	1	16409	N21 E79	300	300	2.5									
79	11	3	16409	N23 E55	299	500	2.0									
79	11	4	16409	N23 E42	298	500	2.0									
79	11	5	16409	N22 E29	297	300	1.5									
79	11	6	16409	N22 E13	298	300	2.0									
79	11	7	16409	N22 E01	299	200	2.0									
79	11	9	16409	N22 W26	299	100	2.0		N20 W26				M	160	19	DAI

HALE REGION 16420 CMP DATE 8.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	9	16420	N10 W16	289	100	2.0									

HALE REGION 16413 CMP DATE 9.5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	3	16413	S15 E80	274	1500	3.5	21030	S14 E79	276	AP	2	M	460	4	ESO
79	11	4	16413	S15 E65	275	2500	3.5	21030	S14 E66	276	(B)	3	R	490	11	EHO
79	11	5	16413	S15 E51	275	3000	4.0	21030	S15 E54	274	(Y)	4				
79	11	6	16413	S15 E36	275	4000	4.0	21030	S15 E40	275	(D)	5				
79	11	7	16413	S15 E24	276	5000	3.5	21030	S15 E23	278	D	5	M	1430	52	FKC
79	11	8	16413					21030	S15 E13	275	(D)	5	R	1070	49	FKC
79	11	9	16413	S15 W04	277	5000	3.5	21030	S15 E00	275	(D)	5				
79	11	10	16413	S15 W19	277	5400	3.5	21030	S15 W14	276	(D)	5	M	90	8	DAO
79	11	11	16413	S15 W30	277	5000	3.0	21030	S15 W28	276	(BY)	4	R	810	29	FKI
79	11	12	16413	S15 W43	276	5500	3.0	21030	S14 W40	275	(D)	4				
79	11	13	16413	S15 W57	277	5300	3.0	21030	S14 W54	276	(D)	4				
79	11	14	16413					21030	S14 W67	276	(BP)	4				
79	11	15	16413	S16 W78	270	2000	3.0									

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HALE REGION 16417 CMP DATE 10.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	5	16417	S17 E64	262	1000	3.5									
79	11	6	16417	S17 E49	262	300	2.0									
79	11	7	16417	S16 E37	263	800	2.0		S17 E36				M	10	3	BXO
79	11	9	16417	S16 E11	262	600	2.0		S14 E05				M	1330	45	FKC
79	11	10	16417	S17 W05	263	300	2.0		S14 W05				M	1330	54	FKC
79	11	11	16417	S17 W16	263	100	1.5									
79	11	12	16417	S17 W27	260	200	1.5									

HALE REGION 16427 CMP DATE 10.8

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	12	16427	N09 W27	260	200	1.5									

HALE REGION 16415 CMP DATE 10.9

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	4	16415	S11 E80	260	400	2.0									
79	11	5	16415	S12 E67	259	1000	2.0	21038	S12 E67	261	(B)	3				
79	11	6	16415	S12 E53	258	900	2.0	21038	S10 E54	261	(B)	2				
79	11	7	16415	S11 E41	259	1200	2.0	21038	S11 E40	261	B	2	M	20	5	BXO
79	11	9	16415	S11 E14	259	1000	2.0									
79	11	10	16415	S12 W01	259	700	2.0	21051	S13 E00	262	(AP)	2				
79	11	11	16415	S12 W12	259	600	2.0	21051	S12 W13	261	AP	1				
79	11	12	16415	S12 W25	258	500	2.0									
79	11	13	16415	S12 W39	259	500	1.5									

HALE REGION 16414B CMP DATE 11.1 RETURN OF PART OF REGION 16357 ROTATIONS 3 AND 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	4	16414B	N24 E80	260	1500	2.0	21034	N24 E79	263	AP	3	R	390	1	HHX
79	11	5	16414B	N24 E67	257	2200	2.5	21034	N23 E68	260	(AP)	5	R	450	1	HHX
79	11	6	16414B	N24 E54	257	2100	3.0	21034	N23 E55	260	(AP)	5				
79	11	7	16414B	N25 E43	257	2000	2.5	21034	N23 E40	261	AP	5	M	460	9	CHO
79	11	8	16414B					21034	N23 E29	259	(BP)	5	R	310	8	CHO
79	11	9	16414B	N25 E17	256	2000	3.5	21034	N22 E17	258	(BP)	5	M	360	10	CHO
79	11	10	16414B	N25 E02	256	1800	2.0	21034	N22 E03	259	(AP)	5	M	440	6	CHO
79	11	11	16414B	N25 W10	257	1500	2.0	21034	N22 W10	258	(AP)	5	R	390	6	CHO
79	11	12	16414B	N25 W22	255	1300	2.0	21034	N22 W22	257	(BP)	5	R	400	4	CHO
79	11	13	16414B	N24 W35	255	1200	2.0	21034	N22 W35	257	(BP)	5	M	350	4	CHO
79	11	14	16414B					21034	N22 W47	256	(AP)	5	M	300	1	HHX
79	11	15	16414B	N22 W64	256	1000	2.0	21034	N22 W60	256	(AP)	5				
79	11	16	16414B	N21 W78	258	800	2.0	21034	N22 W72	255	(AP)	4	M	250	1	HHX

HALE REGION 16416 CMP DATE 11.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	4	16416	S30 E83	257	300	3.5									
79	11	5	16416	S32 E70	256	700	3.5	21036	S32 E72	256	(X)	2				
79	11	6	16416	S31 E55	256	500	3.0	21036	S31 E59	256	(BY)	3				
79	11	7	16416	S30 E45	255	700	3.0		S30 E44				M	130	10	DAI
79	11	8	16416					21036	S30 E35	253	(B)	3				
79	11	9	16416	S30 E20	253	700	3.5	21036	S31 E22	253	(BF)		M	80	5	CAO
79	11	10	16416	S30 E05	253	900	2.5	21036	S30 E09	253	(BF)	3	M	60	6	CAO
79	11	11	16416	S30 W06	253	700	2.5	21036	S30 W05	253	AP	2	R	30	2	HRX
79	11	12	16416	S30 W19	252	1000	2.0	21036	S30 W17	252	(AP)	2				
79	11	13	16416	S30 W33	253	400	1.5	21036	S28 W32	254	(B)	2				
79	11	15	16416	S30 W60	252	300	1.0									

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HALE REGION 16418 CMP DATE 12.4 RETURN OF REGION 16365 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	5	16418	S17 E85	241	1200	2.5	21039	S17 E85	243	(X)	2				
79	11	6	16418	S16 E70	241	3000	3.5	21039	S16 E70	245	(X)	3				
79	11	7	16418	S16 E60	240	5000	3.5	21039	S17 E58	243	BY	3	M	1360	39	FKC
79	11	8	16418					21039	S17 E46	242	(D)	4	R	1510	37	FKC
79	11	9	16418	S16 E33	240	6800	3.5	21039	S17 E33	242	(BY)	5	M	1360	33	FKC
79	11	10	16418	S16 E19	239	6500	3.5	21039	S17 E20	242	(D)	5	N	1410	52	FKC
79	11	11	16418	S16 E08	239	8000	3.5	21039	S17 E05	243	(BY)	5	R	1690	64	FKC
79	11	12	16418	S16 W05	238	8500	3.5	21039	S17 W07	242	(BY)	5				
79	11	13	16418	S16 W19	239	9000	3.5	21039	S17 W20	242	(BY)	5				
79	11	14	16418					21039	S16 W33	242	(BY)	5				
79	11	15	16418	S16 W46	238	8700	3.5	21039	S17 W46	242	(BY)	5	R	460	37	EKC
79	11	16	16418	S16 W59	239	9000	4.0	21039	S17 W60	243	(BP)	5	M	370	5	CHO
79	11	18	16418	S17 W83	238	5000	3.5									

HALE REGION 16419A CMP DATE 13.0 RETURN OF PART OF REGION 16357 ROTATIONS 3 AND 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	6	16419A	N30 E83	228	2300	3.0	21041	N31 E80	235	AP	2				
79	11	7	16419A	N28 E66		2500	2.5	21041	N31 E70	231	BY	3	M	450	11	EAI
79	11	8	16419A					21041	N31 E60	228	(BY)	4	R	380	18	ESI
79	11	9	16419A	N28 E39		2700	2.5	21041	N31 E48	227	(BY)	5	M	380	15	EAI
79	11	10	16419A	N30 E25		2800	2.5	21041	N31 E35	227	(BY)	4	M	580	22	EKI
79	11	11	16419A	N30 E15		2800	3.5	21041	N32 E23	225	(B)	4	R	460	12	EKI
79	11	12	16419A	N30 E03		3500	3.5	21041	N31 E10	225	(B)	5	H	570	17	EKI
79	11	12	16419A	N35 E22	211	2800	3.0									
79	11	13	16419A	N30 W10		3800	3.5	21041	N32 W01	223	(D)	5	M	430	13	EKI
79	11	14	16419A					21041	N32 W14	223	(BY)	5	M	350	9	EAI
79	11	15	16419A	N29 W39		3800	3.5	21041	N32 W27	223	(BY)	5				
79	11	16	16419A	N29 W50		3500	3.0	21041	N32 W39	222	(BY)	5	M	270	4	ESO
79	11	18	16419A	N28 W75		3600	3.0	21041	N33 W63	219	(B)	4				
79	11	19	16419A	N25 W89		1100	3.0	21041	N32 W71	214	(X)	2				

HALE REGION 16421 CMP DATE 14.2 RETURN OF PART OF REGION 16368 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	8	16421					21042	N11 E80	208	(AF)	3	R	160	2	ESO
79	11	9	16421	N14 E60	213	4500	2 5	21042	N11 E67	208	(AF)	3				
79	11		16421					21045	N16 E57	218	(AF)	2				
79	11	10	16421	N13 E44	214	5200	3.0	21042	N11 E51	211	(BF)	4				
79	11		16421					21045	N16 E44	218	(AF)	2				
79	11	11	16421	N13 E33	214	5200	3.5	21042	N11 E37	211	(BY)	4	R	150	14	CAO
79	11		16421					21045	N16 E31	217	(AF)	2				
79	11	12	16421	N12 E17	216	5900	3.0	21042	N11 E24	211	(BF)	4				
79	11	13	16421	N10 E05	215	5400	3.0	21042	N11 E12	210	(BY)	4	M	100	8	CSO
79	11	14	16421					21042	N11 E00	209	(BY)	4	M	70	7	CSO
79	11		16421					21063	N08 W08	217	(AF)	2				
79	11	15	16421	N10 W23	215	5200	3.0	21042	N11 W12	208	(BF)	4				
79	11		16421					21063	N07 W20	216	(AF)	2				
79	11		16421					21067	N10 W27	223	(AF)	1				
79	11	16	16421	N10 W35	215	4500	3.0	21042	N12 W26	209	(BY)	4	M	50	6	DSO
79	11	18	16421	N08 W60	215	4800	3.0	21042	N12 W54	210	(BY)	3				
79	11	19	16421	N08 W74	215	4800	3.0	21042	N12 W67	210	(BP)	3				

HALE REGION 16422 CMP DATE 14.2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	9	16422	S04 E57	216	1100	1 5									
79	11	10	16422	S05 E42	216	800	1.5	21049	S07 E45	217	(AP)	2				
79	11	11	16422	S05 E31	216	900	2.0									
79	11	12	16422	S05 E18	215	1100	2.0									
79	11	13	16422	S05 E05	215	1200	2.0									
79	11	15	16422	S06 W24	216	1500	2.0	21069	S05 W23	219	(AP)	3				
79	11	16	16422	S07 W36	216	1800	2 5	21069	S05 W35	218	(AP)	2				
79	11	18	16422	S08 W60	215	2800	2.5	21069	S05 W60	216	(BP)	4	R	190	16	DAI
79	11	19	16422	S09 W75	216	2800	2.5	21069	S06 W75	216	(BF)	3				

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HALE REGION 16419B CMP DATE 14.6 RETURN OF REGION 16366 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	7	16419 B	N34 E80	220	2800	2.0								
79	11	9	16419B	N34 E55	218	2800	3.0								
79	11	10	16419B	N35 E42	216	2500	3.0								
79	11	11	16419B	N35 E31	216	2300	3.5								
79	11		16419B					21053	N25 W02	237	(AF)	2			
79	11	13	16419B	N35 E10	210	2500	3.5								
79	11	15	16419B	N35 W19	211	2500	2.5								
79	11	16	16419B	N34 W31	211	2300	2.0	21072	N35 W25	208	(AF)	3			
79	11	18	16419 B	N34 W52	207	2500	2.5								
79	11	19	16419 B	N33 W66	207	1800	3.0								
79	11	21	16419 B	N33 W90	206	400	1.0								

HALE REGION 16423 CMP DATE 14.8 RETURN OF PART OF REGIONS 16370 AND 16376 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	9	16423	S17 E65	208	1160	1.5								
79	11	10	16423	S17 E50	208	800	1.5								
79	11	11	16423	S17 E38	209	700	2.0								
79	11	12	16423	S17 E25	208	700	1.5								
79	11	13	16423	S17 E13	207	1000	3.0		S17 E13				H	80	5 CSO
79	11	15	16423	S16 W15	207	1600	2.5	21070	S14 W15	211	(AP)	2			
79	11	16	16423	S16 W26	206	1300	2.0	21070	S15 W25	208	(B)	3	H	30	3 CSO
79	11	18	16423	S17 W50	205	1300	2.0	21070	S15 W55	211	(AP)	3			
79	11	19	16423	S18 W65	206	1200	2.0	21070	S16 W69	212	(AP)	2	H	20	1 HRX

HALE REGION 16424 CMP DATE 15.2 RETURN OF PART OF REGION 16368 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	9	16424	S01 E74	199	1000	1.5								
79	11	10	16424	S01 E58	200	800	1.5								
79	11	11	16424	S01 E46	201	900	2.0								
79	11	12	16424	S01 E33	200	1100	2.0								
79	11	13	16424	S01 E18	202	1100	2.5	21057	S02 E19	203	(AP)	2	H	0	1 AXX
79	11		16424					21060	N03 E23	199	(AP)	2			
79	11	14	16424					21057	S02 E06	203	(AP)	2	H	0	1 AXX
79	11		16424					21065	N04 E04	205	(B)	2			
79	11	15	16424	S01 W10	202	1200	2.5	21057	S02 W08	204	(AP)	2	R	10	5 BXO
79	11	16	16424	S01 W23	203	1300	2.0	21057	S01 W22	205	(AP)	2	H	10	2 BXO
79	11	18	16424	S02 W49	204	1700	2.0	21057	S01 W51	207	(AP)	3	R	40	3 CSO
79	11	19	16424	S03 W64	205	1300	2.0		S06 W67				H	190	7 DAI

HALE REGION 16434 CMP DATE 15.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	13	16434	S09 E19	201	100	1 5								
79	11	15	16434	S09 W09	201	100	2.0		S08 W07				R	10	1 AXX

HALE REGION 16428 CMP DATE 15.7 RETURN OF PART OF REGION 16377 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	12	16428	S12 E39	194	300	1.0								
79	11	13	16428	S12 E26	194	300	1.5								
79	11	15	16428	S11 W03	195	300	2.0								
79	11	16	16428	S11 W15	195	100	1.5								

HALE REGION 16425 CMP DATE 15.8 RETURN OF PART OF REGION 16368 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	11	9	16425	N17 E80	193	2000	2.0	21046	N15 E79	196	(AP)	3			
79	11	10	16425	N17 E65	193	3800	2.0	21046	N14 E66	196	(AP)	4	H	230	1 HSX
79	11	11	16425	N17 E54	193	4500	2.5	21046	N14 E53	195	(AP)	5	R	240	1 HHX
79	11		16425					21052	N20 E63	185	(AP)	2			

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HALE REGION 16425 (CONT) CMP DATE 15.8 RETURN OF PART OF REGION 16368 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	12	16425	N17 E41	192	4800	3.5
79	11		16425				
79	11		16425				
79	11	13	16425	N17 E27	193	4800	3.0
79	11		16425				
79	11	14	16425				
79	11		16425				
79	11	15	16425	N17 W02	194	5200	3.5
79	11		16425				
79	11	16	16425	N17 W13	193	5300	3.0
79	11		16425				
79	11		16425				
79	11		16425				
79	11	18	16425	N17 W38	193	5700	2.5
79	11	19	16425	N15 W52	193	4800	2.5
79	11	20	16425				
79	11	21	16425	N15 W77	193	1200	2.5
79	11		16425				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21046	N14 E41	194	(AP)	5				
21052	N21 E51	184	(AP)	2				
21054	N23 E40	195	(B)	3	H	10	1	AXX
21046	N14 E31	191	(BP)	5	M	470	11	DSO
21054	N22 E31	191	(AP)	2	M	10	1	AXX
21046	N13 E19	190	(BP)	5	M	310	6	DSO
21054	N22 E18	191	(AP)	2				
21046	N14 E04	192	(BY)	5				
21054	N22 E01	195	(AP)	2				
21046	N14 W11	194	(AP)	5	M	130	4	CSO
21054	N22 W15	198	(AP)	2				
21073	N18 W05	188	(AP)	2				
21074	N14 W04	187	(AP)	3				
21046	N14 W37	193	(AP)	5	R	200	1	HSX
21046	N13 W51	194	(AP)	4				
21046	N14 W63	193	(AP)	4				
21046	N14 W77	194	(AP)	3	M	250	1	HSX
21081	N14 W78	173	(B)	3				

HALE REGION 16432 CMP DATE 16.7 RETURN OF PART OF REGION 16377 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	12	16432	S15 E50	183	300	1.0
79	11	13	16432	S16 E37	183	300	1.0
79	11	15	16432	S16 E10	182	300	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16433 CMP DATE 16.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	13	16433	S33 E37	183	300	3.5
79	11	14	16433				
79	11	15	16433	S32 E10	182	1500	4.0
79	11	16	16433	S32 W03	183	1900	3.5
79	11	18	16433	S33 W27	182	2800	3.5
79	11	19	16433	S34 W40	181	3400	3.5
79	11	20	16433				
79	11	21	16433	S35 W66	182	2300	3.5
79	11	22	16433				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21061	S33 E38	184	(B)	2				
21061	S33 E25	184	(B)	3				
21061	S33 E12	184	(B)	3	R	160	21	DRI
21061	S32 W01	184	(BY)	4	M	240	14	EAI
21061	S32 W27	183	(D)	4	R	80	27	FRI
21061	S33 W40	183	(BY)	4				
21061	S33 W51	181	(BP)	4				
21061	S33 W65	182	(B)	3	M	390	9	FSI
21061	S33 W72	175	(B)	4	M	90	1	HSX

HALE REGION 16429 CMP DATE 17.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	12	16429	N13 E60	173	200	1.0
79	11	13	16429	N13 E47	173	200	1.5
79	11	14	16429				
79	11	15	16429	N13 E19	173	300	1.5
79	11	16	16429	N13 E05	175	300	1.5
79	11	18	16429	N11 W20	175	400	2.0
79	11	19	16429	N10 W35	176	500	1.5
79	11	21	16429	N10 W59	175	100	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21066	N12 E38	171	(B)	2	M	10	3	BXO
21066	N11 E20	176	(AP)	3	R	10	3	BXO
21066	N12 E06	177	(AP)	3	M	0	2	AXX
21066	N13 W20	176	(BP)	2				

HALE REGION 16426 CMP DATE 17.6 RETURN OF REGION 16373 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO	LAT CMD	L	AREA	INT
79	11	10	16426	N30 E85	173	700	1 0
79	11	11	16426	N32 E75	172	2800	2.0
79	11	12	16426	N31 E62	171	4000	3.5
79	11		16426				
79	11	13	16426	N31 E49	171	5300	3.0
79	11		16426				
79	11		16426				
79	11	14	16426				
79	11		16426				
79	11	15	16426	N31 E22	170	5400	3.0
79	11		16426				
79	11	16	16426	N30 E09	171	5500	3.0
79	11		16426				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21050	N33 E78	164	AP	2				
21050	N33 E67	181	(AP)	4	R	180	1	HSX
21050	N32 E53	182	(AP)	4	H	120	3	CAO
21055	N37 E71	164	(AP)	2	H	0	1	AXX
21050	N31 E40	182	(AP)	5	M	130	2	CSO
21062	N20 E43	179	AP	1				
21055	N37 E61	161	(AP)	2	M	10	1	AXX
21050	N31 E28	181	(AP)	5	M	150	1	HSX
21055	N37 E47	162	(B)	2	M	0	1	AXX
21050	N31 E14	182	(AP)	5				
21055	N37 E35	161	(AP)	2				
21050	N31 E07	176	(BP)	5	M	70	7	DSO
21055	N37 E26	157	(AP)	2	M	0	1	AXX

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HALE REGION 16426 (CONT) CMP DATE 17.6 RETURN OF REGION 16373 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	18	16426	N30 W19	174	6200	3.5	21050	N32 W17	173	(BP)	4	R	160	16	DSO
79	11	19	16426	N30 W32	173	6400	3 5	21050	N31 W30	173	(BP)	4				
79	11	20	16426					21050	N32 W41	171	(BP)	4				
79	11	21	16426	N30 W57	173	4400	3.5	21050	N32 W55	172	(B)	4	M	200	10	ESI
79	11	22	16426					21050	N32 W68	171	(B)	4	M	180	2	ESO
79	11	23	16426					21050	N34 W73	162	(AP)	4	R	140	1	HHX
79	11	24	16426	N34 W90	166	1100	2.0									

HALE REGICN 16430 CMP DATE 18.1 RETURN OF PART OF REGION 16379 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	12	16430	S12 E72	161	300	1 0									
79	11	13	16430	S12 E58	162	500	1.5									
79	11	15	16430	S11 E29	163	400	1.0									

HALE REGION 16440 CMP DATE 18.6

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	18	16440	N09 W02	157	100	1.5									
79	11	19	16440	N09 W15	156	100	1 0									

HALE REGION 16431 CMP DATE 18.8 RETURN OF REGION 16374 ROTATIONS 4 AND 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	12	16431	S28 E72	161	1400	1.0									
79	11	13	16431	S27 E62	158	1400	2.0									
79	11	15	16431	S28 E34	158	1600	1.5									
79	11	16	16431	S28 E21	159	1400	1.5									
79	11	18	16431	S29 E01	154	1400	2.0									
79	11	19	16431	S31 W12	153	1400	2.0									
79	11	21	16431	S32 W37	153	1000	2.0									
79	11	24	16431	S33 W74	150	300	1.0									

HALE REGION 16435 CMP DATE 19.6 RETURN OF PART OF REGION 16379 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	13	16435	S13 E78	142	1000	2.0									
79	11	15	16435	S13 E48	144	1600	2.0									
79	11	16	16435	S13 E36	144	1700	2 0									
79	11	18	16435	S14 E12	143	1400	2.0									
79	11	19	16435	S14 W01	142	1500	2.0									
79	11	21	16435	S15 W27	143	1700	2.0									
79	11	24	16435	S16 W65	141	1100	2.0									
79	11	25	16435	S18 W78	141	100	1.5									

HALE REGION 16436 CMP DATE 20.2 RETURN OF PART OF REGION 16381 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	15	16436	N20 E55	137	400	1.0									
79	11	16	16436	N20 E43	137	400	1.0									
79	11	18	16436	N20 E20	135	400	1 5									
79	11	19	16436	N18 E06	135	700	2 0									
79	11	21	16436	N17 W20	136	700	2.5									
79	11	24	16436	N17 W57	133	600	2.0									
79	11	25	16436	N17 W70	133	300	2.0									

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HALE REGION 16437 — CMP DATE 21.3 — RETURN OF PART OF REGION 16381 — ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	15	16437	N28 E73	119	400	2.0
79	11	16	16437	N27 E59	121	400	2.0
79	11	18	16437	N27 E34	121	2000	3 0
79	11	19	16437	N25 E20	121	3000	3.0
79	11	20	16437				
79	11	21	16437	N24 W06	122	2500	3.5
79	11	22	16437				
79	11	23	16437				
79	11	24	16437	N24 W44	120	2400	3.5
79	11	25	16437	N24 W56	119	1900	3.0
79	11	26	16437				
79	11	27	16437	N26 W83	118	1600	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21075	N24 E60	123	(B)	3	M	40	2	DSO
21075	N24 E36	120	(B)	4				
21075	N23 E23	120	(BP)	4				
21075	N24 E10	120	(B)	4				
21075	N23 W03	120	(B)	4	M	160	11	DAI
21075	N23 W16	119	(B)	4	M	110	4	DSO
21075	N23 W30	119	(B)	4	R	150	5	DSO
21075	N23 W42	119	(B)	4	M	140	2	DSO
21075	N24 W56	118	(B)	4	P	130	2	DSO
21075	N24 W70	121	(B)	4	P	120	3	DSO
21075	N25 W79	116	AP	2				

HALE REGION 16449 — CMP DATE 21.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	23	16449				
79	11	24	16449	N13 W43	119	1500	2.5
79	11	25	16449	N14 W55	118	1500	3.0
79	11	26	16449				
79	11	27	16449	N15 W82	117	900	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21083	N14 W31	120	(B)	3				
21083	N14 W43	120	(B)	3	M	110	9	DSI
21083	N14 W57	119	(B)	3	P	50	5	CAO
21083	N14 W71	122	(AP)	3	P	10	2	BXO

HALE REGION 16438 — CMP DATE 22.6 — RETURN OF REGION 16386 — ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	16	16438	N18 E76	104	1800	1 5
79	11	18	16438	N18 E50	105	2600	2.0
79	11	19	16438	N18 E36	105	2300	2.0
79	11	21	16438	N17 E11	105	2500	2.5
79	11	24	16438	N16 W28	104	2800	2.5
79	11	25	16438	N16 W40	103	1800	2.5
79	11	27	16438	N16 W68	103	1400	2.0
79	11	28	16438	N16 W82	104	500	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16439 — CMP DATE 23.0 — RETURN OF PART OF REGION 16384 — ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	16	16439	S16 E85	95	500	4.0
79	11	18	16439	S15 E60	95	1500	3.5
79	11	19	16439	S16 E45	96	2500	3.0
79	11	20	16439				
79	11	21	16439	S17 E17	99	2400	3.5
79	11	22	16439				
79	11	23	16439				
79	11	24	16439	S18 W23	99	2000	3.0
79	11	25	16439	S18 W36	99	2100	3.0
79	11	26	16439				
79	11	27	16439	S18 W64	99	1600	2.5
79	11	28	16439				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21076	S20 E57	99	(BP)	4	R	90	2	CSO
21076	S19 E41	102	(AP)	3				
21076	S19 E28	102	(BP)	3				
21076	S18 E15	102	(AP)	4	M	110	7	CSO
21076	S18 E01	102	(AP)	4	M	100	7	CAO
21076	S18 W13	102	(AP)	3				
21076	S16 W27	104	(B)	3	M	50	3	CSO
21076	S16 W42	104	(AP)	3	P	30	3	CSO
21076	S16 W55	106	(AP)	3	P	10	1	AXX
21076	S16 W69	106	(AP)	3				
21076	S16 W83	107	AP	1				

HALE REGION 16441 — CMP DATE 23.2 — RETURN OF PART OF REGION 16384 — ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	11	18	16441	S11 E62	93	600	3.5
79	11	19	16441	S12 E47	94	700	2.0
79	11	21	16441	S13 E20	96	1000	2 5
79	11	24	16441	S13 W20	96	400	1.5
79	11	25	16441	S13 W33	96	400	1.5
79	11	27	16441	S14 W68	95	300	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

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HALE REGION 16446 CMP DATE 23.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	19	16446	N28 E45	96	300	1.5									
79	11	21	16446	N27 E28	96	300	2.0		N25 E16				M	0	1	AXX
79	11	24	16446	N26 W18	94	300	2.5									
79	11	25	16446	N25 W31	94	100	1.0									

HALE REGION 16444 CMP DATE 23.8 RETURN OF REGION 16394 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	18	16444	N20 E68	87	300	1.5									
79	11	19	16444	N19 E54	87	400	1.5									
79	11	21	16444	N19 E27	89	400	2.5		N25 E28				M	10	2	BXO
79	11	24	16444	N19 W12	88	500	2.0									
79	11	25	16444	N18 W24	87	800	2.0									
79	11	27	16444	N19 W50	85	500	2 0									
79	11	28	16444	N19 W63	85	500	1.5									
79	11	29	16444	N20 W77	83	300	1.5									

HALE REGION 16442 CMP DATE 23.9

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	18	16442	S21 E67	88	600	3.0	21077	S26 E68	88	(AP)	2				
79	11	19	16442	S22 E53	88	600	2.0	21077	S23 E48	95	(AP)	2				
79	11	20	16442					21077	S25 E36	94	(AP)	3				
79	11	21	16442	S23 E27	89	1400	3.5	21077	S25 E24	93	(BP)	4	M	150	13	DAI
79	11	22	16442					21077	S25 E13	90	(D)	4	M	440	21	EKI
79	11	23	16442					21077	S25 E01	88	(D)	4	R	370	23	EAI
79	11	24	16442	S24 W11	87	3000	3.5	21077	S25 W11	88	(D)	4	M	340	19	EKI
79	11	25	16442	S25 W23	86	3200	3 5	21077	S24 W27	89	(B)	4	P	180	19	CKI
79	11		16442					21087	S28 W21	83	(AP)	3				
79	11	26	16442					21077	S24 W39	90	(BP)	3	P	80	11	DSO
79	11		16442					21087	S28 W32	83	(AP)	3	P	10	2	BXO
79	11		16442					21089	S18 W30	81	(AP)	3				
79	11	27	16442	S25 W51	86	3400	3.0	21077	S24 W52	89	(B)	3				
79	11		16442					21089	S19 W43	80	(B)	3				
79	11	28	16442					21077	S24 W68	92	AF	1				
79	11		16442					21089	S19 W55	79	(AP)	2				
79	11	29	16442	S25 W77	83	700	1.0									

HALE REGION 16460 CMP DATE 24.2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	27	16460	S18 W48	83	400	2.5									
79	11	28	16460	S19 W60	82	600	2.5									
79	11	29	16460	S19 W76	82	400	2.5									

HALE REGION 16453 CMP DATE 25.1

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	22	16453					21082	N17 E29	74	(AP)	3				
79	11	23	16453					21082	N17 E17	72	(B)	4	R	60	10	CAO
79	11	24	16453	N18 E04	72	1400	3.5	21082	N17 E03	74	(BP)	4	M	110	11	DAI
79	11	25	16453	N18 W10	73	1700	3 5	21082	N17 W12	74	(B)	3	P	80	10	DSO
79	11	26	16453					21082	N17 W24	75	(B)	4	P	80	10	DAO
79	11	27	16453	N18 W37	72	1400	3.5	21082	N17 W37	74	(BP)	3				
79	11	28	16453	N17 W50	72	1400	3.0	21082	N17 W51	75	(B)	3				
79	11	29	16453	N17 W65	71	600	2.5	21082	N17 W68	78	(AP)	3	M	30	1	HSX
79	11	30	16453	N17 W75	72	500	2.0	21082	N17 W79	77	AP	1				

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HALE REGION 16445 CMP DATE 25.2 RETURN OF PART OF REGION 16384 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	19	16445	S28 E70	71	400	1.5									
79	11	21	16445	S30 E45	71	500	1.0									
79	11	24	16445	S30 E06	70	400	1.5									
79	11	25	16445	S30 W07	70	300	1.0									
79	11	27	16445	S30 W35	70	300	1.0									
79	11	28	16445	S30 W48	70	300	1 0									
79	11	29	16445	S28 W62	68	200	1 0									

HALE REGION 16443 CMP DATE 25.4 RETURN OF PART OF REGION 16388 AND NEW ROTATIONS 2 AND 1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	18	16443	S11 E90	65	400	2.0									
79	11	19	16443	S12 E75	66	2700	2.5	21078	S16 E75	68	AP	2				
79	11	20	16443					21078	S16 E60	70	(AP)	4	M	120	3	CSO
79	11	21	16443	S13 E48	68	1500	3.0	21078	S16 E44	73	(AP)	4	M	140	4	CSO
79	11	22	16443					21078	S16 E29	74	(AP)	4	M	150	3	CSO
79	11	23	16443					21078	S15 E19	70	(BP)	4	R	140	2	HAX
79	11	24	16443	S13 E09	67	1100	2.5	21078	S15 E03	74	(AP)	4	M	200	2	HHX
79	11		16443					21085	S14 E13	64	(AF)	3	M	10	3	BXO
79	11	25	16443	S14 W04	67	1600	2.5	21078	S15 W11	73	(AP)	4	P	150	11	DSO
79	11	26	16443					21078	S14 W22	73	(AP)	4	P	100	8	DAO
79	11	27	16443	S14 W32	67	1500	3.0	21078	S15 W37	74	(BP)	4				
79	11	28	16443	S14 W45	67	1700	3.0	21078	S15 W49	73	(AP)	3				
79	11	29	16443	S15 W60	66	2300	3.0	21078	S15 W63	73	(B)	3	M	110	6	DSO
79	11	30	16443	S15 W70	67	3000	3.0	21078	S17 W75	73	(BF)	3				
79	12	01	16443	S16 W85		300	1.5									

HALE REGION 16447 CMP DATE 25.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	21	16447	N12 E50	66	300	3.0		N10 E48				M	10	3	BXO
79	11	24	16447	N09 E10	66	100	1.0									

HALE REGION 16448 CMP DATE 27.0 RETURN OF PART OF REGIONS 16389 AND 16392 ROTATIONS 2 AND 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	21	16448	N23 E67	49	500	1,5									
79	11	24	16448	N23 E28	48	400	1.5									
79	11	25	16448	N23 E15	48	600	2.0		N22 E07				P	10	2	BXO
79	11	26	16448					21090	N22 E06	45	(AP)	3	P	30	5	CSO
79	11	27	16448	N23 W10	45	900	2.5									
79	11	28	16448	N23 W24	46	900	2.0									
79	11	29	16448	N23 W40	46	900	1.5									
79	11	30	16448	N23 W50	47	900	1.0									
79	12	01	16448	N21 W62		700	1.0									

HALE REGION 16462 CMP DATE 27.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	28	16462	S19 W24	46	200	1 0									

HALE REGION 16450 CMP DATE 28.5 RETURN OF PART OF REGION 16398 ROTATION 6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	24	16450	N15 E50	26	1700	3.5		N11 E42				M	20	3	CRO
79	11	25	16450	N14 E36	27	1500	3.0									
79	11	27	16450	N14 E09	26	1000	2.0									
79	11	28	16450	N14 W05	27	1000	2.0									
79	11	29	16450	N13 W20	26	800	2.0									
79	11	30	16450	N13 W30	27	900	2.0									
79	12	01	16450	N12 W45		1500	2.5									
79	12	03	16450	N10 W68		800	2.0									

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HALE REGION 16470 CMP DATE 29.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	30	16470	S13 W23	20	100	1.5									

HALE REGION 16468 CMP DATE 29.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	30	16468	N10 W22	19	200	1.0									

HALE REGION 16469 CMP DATE 29.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	30	16469	S09 W22	19	300	2.5		S10 W19				R	10	4	BXO
79	12	01	16469	S10 W35		1200	3.0	21098	S11 W34		(B)	3	B	20	6	B
79	12	03	16469	S11 W61		1000	4.0	21106	S07 W59		(B)	3				
79	12	04	16469	S09 W73		1000	3.0	21106	S08 W72		(AP)	1				

HALE REGION 16454 CMP DATE 29.2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	25	16454	N30 E40	23	100	1.0									
79	11	27	16454	N40 E18	17	100	1.5									

HALE REGION 16451 CMP DATE 29.8 RETURN OF PART OF REGION 16398 ROTATION 6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	23	16451					21084	N20 E73	16	(AP)	4	R	100	1	HHX
79	11	24	16451	N24 E68	8	1600	2.5	21084	N20 E62	15	(AP)	4				
79	11		16451					21084	N20 E62	15	(AP)	4				
79	11	25	16451	N24 E55	8	1000	2.5	21084	N20 E47	15	(AP)	4	P	150	1	HSX
79	11	26	16451					21084	N20 E36	15	(AP)	4	P	120	2	HSX
79	11	27	16451	N23 E26	9	2000	2.5	21084	N20 E22	15	(AP)	4				
79	11	28	16451	N23 E13	9	2000	2.5	21084	N20 E10	14	(AP)	4				
79	11	29	16451	N23 W02	8	1600	2.0	21084	N20 W05	15	(AP)	4	M	130	1	HSX
79	11	30	16451	N23 W13	10	1960	2.0	21084	N20 W17	15	(AP)	4				
79	12	01	16451	N22 W27		2400	2.5	21084	N21 W30		(AP)	4				
79	12	02	16451					21084	N21 W44		(AP)	4				
79	12	03	16451	N21 W54		1200	2.5	21084	N22 W55		(AP)	4				
79	12	04	16451	N23 W64		1600	2.5	21084	N21 W67		(AP)	4				
79	12	05	16451	N22 W73		800	1 5									

HALE REGION 16452 CMP DATE 30.7 RETURN OF PART OF REGION 16398 ROTATION 6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	11	24	16452	N15 E79	358	600	2.0									
79	11	25	16452	N14 E66	358	600	2.0									
79	11	26	16452					21091	N12 E47	4	(AP)	3	P	0	1	AXX
79	11	27	16452	N13 E40	356	1000	3.0	21091	N11 E32	5	(AP)	3	M	0	1	AXX
79	11	28	16452	N13 E28	355	800	2.0									
79	11	29	16452	N13 E10	357	500	2.0									
79	11	30	16452	N13 E00	358	700	2.0									
79	12	01	16452	N13 W18		1100	2.5	21099	N10 W17		(B)	3				
79	12	03	16452	N13 W43		400	2.5									
79	12	04	16452	N14 W54		400	2.0									

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A REGION 16404 IS A NEW PLAGE, IN THE LOCATION OF OLD PLAGE 16334.
B REGION 16402 IS A NEW PLAGE, NEAR THE LOCATION OF OLD PLAGE 16342.
C REGION 16417 IS A NEW PLAGE, IN THE LOCATION OF OLD PLAGE 16358.
D REGION 16414B IS THE RETURN OF THE LEADING PORTION OF REGION 16357 OF THE PREVIOUS ROTATION.
E REGION 16419A IS THE RETURN OF THE TRAILING PORTION OF REGION 16357.
F REGION 16422 FORMED NEAR THE SOUTHERN, LEADING, PORTION OF REGION 16363 OF THE PREVIOUS ROTATION.
G PLAGE 16423 HAD A RESURGENCE ON NOV. 13.
H REGION 16425 IS A NEW PLAGE, IN THE LOCATION OF THE NORTHERN, TRAILING, PORTION OF OLD REGION 16368.
I REGION 16435 IS THE REMNANTS OF THE TRAILING HALF OF REGION 16379 OF THE PREVIOUS ROTATION.
J REGION 16436 IS THE LEADING PART OF REGION 16321 OF THE PREVIOUS ROTATION.
K REGION 16439 IS THE LEADING PORTION OF OLD REGION 16384.
L REGION 16441 IS THE NORTHERN PORTION OF OLD REGION 16384.
M REGION 16442 IS A NEW PLAGE, IN THE LOCATION OF OLD PLAGE 16384.
N REGION 16445 IS THE REMNANTS OF THE TRAILING PORTION OF OLD PLAGE 16384.
O REGION 16450 IS THE RETURN OF THE LEADING PORTION OF OLD PLAGE 16398.
P REGION 16468 IS A NEW PLAGE, IN THE LOCATION OF OLD PLAGE 16398.

CONTIGUOUS PLAGES, NOV. 1979

16419A - 16419B
16439 - 16442
16453 - 16459

DAILY CALCIUM PLAGE INDEX

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
79	11	1	65.5	79	11	11	93.5	79	11	21	49.0
79	11	2	*	79	11	12	106.0	79	11	22	*
79	11	3	76.8	79	11	13	106.4	79	11	23	*
79	11	4	72.0	79	11	14	*	79	11	24	45.7
79	11	5	81.4	79	11	15	100.7	79	11	25	41.9
79	11	6	75.8	79	11	16	86.0	79	11	26	*
79	11	7	80.1	79	11	17	*	79	11	27	33.9
79	11	8	*	79	11	18	74.3	79	11	28	26.7
79	11	9	90.2	79	11	19	66.8	79	11	29	23.3
79	11	10	84 8	79	11	20	*	79	11	30	35.2

* NO OBSERVATIONS

Note: No calcium spectroheliograms were secured at Mt. Wilson Observatory on Nov. 2, 8, 14, 17, 20, 22, 23, and 26, 1979.
No sunspot observations were made at Mt. Wilson on Nov. 17, 1979.

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1979

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	0035	0114	0041	1-	3				2				0038E	16388
01	0809	1019	0820	1	5	1		1	1		2		0812E	16386
01	1003	1036	1012	1-	3				1		2		1005E	16386
03	0014	0044	0022	1-	1				1				0016	16398
03	0221	0434	0239	2	5	1		1	2				*	
03	1750	1904	1816	1	5				1	1	10		1754	16401
03	1952	2027	1955	1-	1	1							1951	16398
03	2213	2245	2218	1-	1						1		2215E	16398
04	0511	0730	0537	2	3	1			2				*	
04	0807	0825	0811	1-	1						1		*	
04	1039	1112	1102	1-	5				1		2		*	
04	1432	1536	1448	1-	3				1		2		*	
04	1702	1758	1732	1	5				1	1	11		HY	
04	1740	1747D	1747	1-	3				1		7		HY	
04	1802	1921	1828	1-	3	1			1		7		HY	
04	2351	0002	2356	1-	3	1					1		2349	16401
05	0200	0304	0212	2	3	1			1		1		0212E	16406
05	0527	0627D	0537	1-	1				1				*	
05	0627	0706	0633	1-	1				1				*	
05	1252	1315D	1315	1+	5	2		1	1		3		HY	
05	1432	1530	1300	1-	3				1	1	6		HY	
05	1543	1634	1615	1-	3				1	1	1		1541	16397
05	1623	1705	1633	1-	5				1	1	7		HY	
05	1740	1817	1730	1-	5				1	1	12		1736	16413
05	1800E	1915	1820	1-	3						2		1758	16413
05	1821	1825D	1825	1-	1						1		1820	16398
05	1837	1900	1842	1-	3					1	1		1836	16413
05	1942	2036D	1948	1-	3					1	11		1935	16413
05	2041	2057	2045	1-	5	1					1		2036	16406
05	2146	2241D	2151	1	5				1	1	7		2149	16413
05	2241E	2345D	2253	1+	5				2	1	1		2243	16413
05	2343	0034	2350	2					1		1		2342	16413
06	0103	0209	0115	1-	3			1	1				*	
06	0228	0309D	0232	2	3	1			1				*	
06	0309E	0412	0320	2	3	1			1				*	
06	0412E	0501D	0418	1+	1				1				*	
06	0501E	0812D	0520	2	5	2			1				*	
06	0652	0710	0654	1-	1						1		*	
06	0834	0920	0859	1-	1	1							0834	16398
06	1125E	1139	1130	1-	5	1		1	2		3		HY	
06	1311	1325D	1325	1-	5				1		4		HY	
06	1344	1358D	1346	1-	5	1			1	1	3		1337	16406
06	1415	1450	1428	1-	5			1	1	1	7		1414	16398
06	1450	1456D	1456	1	5			1	1	1	13		1447	16413
06	1544	1553D	1553	1-	5				1		7		1540	16413
06	1634	1731	1645	1-	5				1		11		1631	16413
06	1825	1845D	1845	1-	5				1		6		1823	16413
06	1900	2000	1912	1-	5	1			1		7		1852	16413
06	2001	2050	2017	1-	5				1		4		2004	16413
06	2136	2225	2141	1-	5				1	1	4		2141	16413
07	0100	0313	0111	1-	3	1			1				*	
07	0344	0516D	0354	1-	3	1			1				*	
07	0516E	0606E	0522	1	3	1			1				*	
07	0606E	0809	0612	1	5	1			1		1		*	
07	0901	1106	0932	1	5	1			1		1		0834	16399
07	0923	1030	0932	1-	3				1		1		0924	15413
07	1213	1249	1221	1-	5	1		1	1		2		1208	16414B
07	1940	1948D	1948	1-	1						1		1937	16413
07	2017	2200	2038	1	5	1			2		11		2000	16413
07	2209	2304D	2220	1-	3				1		1		*	
08	0341E	0638D	0549	1	1				1				*	
08	0809E	0842D	0815	1	5				1		1		0814	16413
08	0842E	1118D	0922	2	5	2			1		2		0842	16413
08	1120	1300	1130	2	5	2		1	2		3		1117	16413
08	1328	1510	1406	1-	1				1		1		1325	16413
08	2034U	2057	2040	1-	1	1							2033	16413
08	2329	0150	2338	2	5	1		1	2		1		2329	16418
09	0219	0302D	0246	1-	3				2				*	
09	0302E	0501D	0309	2+	3	1			1				*	
09	0501E	0543D	0517	2	1				1				*	
09	0546E	0734	0607	1-	1				1				*	
09	0603	0655	0607	1+	5	2			1				0600E	16413
09	0804	0927	0812	1-	5				1		3		0804	16418
09	1406	1417	1408	1-	1						1		1402	16414B
09	1429	1436	1-	1							1		1428	16406
09	1525	1552	1532	1-	1						1		1526	16406
09	1926	2002	1936	1-	5						9		1925	16421
09	2031	2110	2040	1	5				1		6		2029	16401
09	2151	2255	2208	1	5				1		3		2142	16421
10	0255	0445	0310	1-	3				2				*	
10	0353	0434	0409	1-	1				1				*	
10	0635	0802	0645	2	5	2			2		1		0642E	16413
10	1212	1305	1222	1	5	2		1	2		3		1201	16413
10	1315	1333D	1333	1	5	1		2	1		3		1317	16425
10	1518	1530D	1530	1	5	1			1	1	10		1514	16413
10	1548	1602D	1602	1-	5			1	1		9		1550	16412
10	1623	1730	1637	1-	5				1		3		1624	16406
10	1807	1810D	1810	1-	1						1		1803	16412
10	1833	1925	1841	1-	5				1	1	13		1830	16413
10	1915	1952	1921	1-	1						1		1912	16425
10	2130	2206D	2135	1-	5				1		3		2129	16418

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1979

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
10	2206E	2235	2212	1-	3				1		1		2205	16412
10	2327	2354	2330	1-	1				1				2326	16413
11	0226	0238	0230	1-	1						1		*	
11	0529	0602D	0538	1-	1				1				*	
11	0602E	0743D	0613	1	3				2				0608E	16412
11	0743E	0810	0751	1-	3				1		1		0745	16418
11	0859	1038	0907	1	5	1		1	2		4		0859	16406
11	1255	1448	1315	1-	5				1		4		1300E	16418
11	1538	1550	1542	1-	5				1	1	3		1538	16418
11	1610	1636	1616	1	5				1	1	9		1607	16406
11	1645	1732	1700	1	5				1	1	11		1648	16418
11	1730	1815	1743	1-	5				1		9		1728	16418
11	2130E	2232D	2142	1	5				1	1	5		2115	16418
11	2232E	2350	2300	1-	1				1				2233	16425
12	0022	0053	0036	1-	1				1				*	
12	0058	0217	0130	2	5	1			2		1		*	
12	0407	0425	0409	1-	1						1		*	
12	0516	1547	1522	1-	1				1				*	
12	1114	1205	1121	1-	1			1					1118	16418
12	1700	1722	1705	1-	3						2		1700	16418
12	1735	1800	1743	1-	1						1		1735	16421
12	1944	2058	2005	1-	5				1		11		1941	16421
12	2233	2306	2243	1-	3				1		1		2227	16426
13	0421E	0538	0421	1-	1				1				*	
13	1116	1143D	1143	1-	5				1		3		1130E	16406
13	1521	1746	1558	1	1				1		1		1518E	16406
14	0234	0300	0243	1-	1				1				0235	16418
14	1442	1630	1506	2	5			2	1	1	9		MF	
14	1515	1554	1521	1	3						2		1520E	16406
14	2025	2130	2038	1	5	1			2	1	9		2023	16419B
14	2056	2118	2100	1	1						1		*	
15	0029E	0211	0048	1-	5			1	2				*	
15	0532	0600	0537	1-	3				2				*	
15	1645	1826	1707	1-	5	1			1		8		1642	16419A
15	2024	2200	2041	1-	5	1			2		10		2021	16425
15	2136E	2250D	2200	1	3				1		1		2131	16419A
15	2250E	2347	2303	1-	1				1				2250	16419A
16	1751	1808	1754	1-	1						1		1751	16439
16	2138	2200	2143	1-	1				1				2139E	16422
17	0120	0156	0125	1-	1				1				0119	16436
17	0225	0518	1253	1+	3	1			2				0225	16419A
17	0537	0719	0613	1-	3				2				*	
17	0602E	0634	0613	1-	1				1				*	
17	1132	1228	1139	1-	5	2			1		3		1130	16433
17	1422	1500	1430	1-	1						1		1417	16433
17	1632	1735	1639	1	5						9		*	
17	1835	1920	1850	1	5						5		1837	16422
17	2101	2241	2109	1	1				1				2100	16438
17	2132	2215	2138	1	5						5		MF	
18	0239E	0324	0246	1-	1				1				*	
18	0355	0445	0357	1-	1				1				*	
18	0659	0806	0711	1	3				2				0700E	16421
18	1100	1201	1114	1	5	1		1	2		3		1055	16433
18	1120	1200	1125	1-	1						1		*	
18	1627	1714	1644	1-	1				1		1		1625	16422
18	1845	1852D	1852	1-	1						1		1841	16422
18	1900	1905D	1905	1-	1						1		1902	16433
18	1938	2025	1945	1-	1						1		1938	16424
18	2339	0134	0017	1	3				2				2343E	16422
19	1147	1228D	1228	1	5	2		1	2		3		1155E	16419A
19	1531	1625	1544	1-	3				1		2		1533E	16426
19	2022	2030D	2030	1-	5					1	4		2022	16423
19	2259	2339D	2305	1-	3				1		1		2258	16423
19	2341E	0037	2352	1-	3				2				2339	16426
20	0146	0217	0152	1-	3				2				*	
20	0351	0450	0400	1-	3				2				*	
20	0606	0657	0613	1-	3				2				0612E	16426
20	1506	1603	1517	1	5				1		8		*	
20	1710	1720	1720	1-	3				1		2		1706E	16423
20	1738	1740D	1740	1-	1						1		1739	16423
21	1803	1651	1610	1-	1						1		1604	16423
22	0332	0405	0336	1-	1				1				*	
22	0735	0820	0741	1-	3				1		1		0729	-----
23	1212	1423	1223	1	5			1	2		3		1209	16426
24	0413E	0450	0421	1-	1				1				*	
24	1020	1046	1023	1-	5				2		1		1015	16446
24	1057	1157	1116	1-	3				1		2		1100	16449
24	2244	2347	2257	1-	1				1				2244	16426
26	0455	0500		1-	1			1					*	
29	2051	2215	2202	1-	1						1		2051	16459

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1979

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01	0000-1620 TM-CF
02	0000-1926 TM-CF
06	1000-1400 UM (16 kHz)
12	1500-1715 UM (10, 13 kHz)
13	1035-1345 UM (16 kHz)
15	0000-1620 TM-CF
20	0805-2400 TM-CF, 1015-1400 UM (16 kHz)
21	0000-2400 TM-CF
22	0000-2400 TM-CF
23	0000-1757 TM-CF
27	1015-1400 UM (16 kHz)

STATIONS REPORTING FOR NOVEMBER 1979

AAVSO (A1, A5, A19, A21, A26, A28, A31, A46, A48) (SES)
ELLENSBURG (EB) (SES)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
KASUAGE (KA) (SWF)
LUCHOW (LW) (SWF)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (LF-SPA)

SIDs BY McMATH REGION

NOVEMBER 1979

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
16386	2																													
16388	1																													
16397					1																									
16398			3		1	2																								
16399							1																							
16401			1	1					1																					
16406					2				2	1	2		2	1																
16412										3	1																			
16413					7	7	3	5	1	5																				
16414A																	1		1											
16414B							1		1					1	3															
16418								1	1	1	6	2		1																
16421									2			2						1												
16422																1	1	3												
16423																			2	2	1									
16424																		1												
16425										2	1			1																
16426											1							2	1				1	1						
16433																	2	2												
16436																	1													
16438																	1													
16439																1														
16446																								1						
16449																								1						
16459																													1	
X-RAY																														
UNKNOWN				3	3	2							1				1				1									
NO FP			1	4	2	6	5	1	4	2	2	5	1	1	2		3	3		3		1		2		1				

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0716	CULG				0000	0716					IIIS W
			CULG				0000	0716	1				N,RS,DP
			CULG				0000	0716					IS W
			CULG				0008	0544	1				N,DC
			CULG				0014	0716	1				IIIN
			PALE				0034.2	0037.6	2				V
			CULG				0034	0037.5	3	0034	0037.5	3	IIIGG,V
			MANI							0035.2	0036.5	2	III
	0000	0900	MANI							0035.2-	0036.5	2	III
			LEAR				0200.8	1017.0	1				B
			LEAR				0200.0	0000.0	1				B
			CULG				0252	0716	1				N,DP
			CULG				0328.5		2				IIIB
			CULG				0423.5		1	0423 5		1	IIIB
			LEAR				0616.4	0617.8	2				CONT
			CULG				0616.5	0617.5	2				IIIG
			CULG				0639.5		2				IIIB
	0645	1525	WEIS				0652	1525	2				IIIN
			CULG				0657	0659.5	2				UNCLF
	0710	1510	BLEN				0711.7	0711.7	2				III
			BLEN				0715 E	1510 D	2				IS
			BLEN	0801 7	0808.8	2	0801.7	0808.8	2				IIIGG
			WEIS				0801.9	0808 7	3				IIIGG
			BLEN	0810.1	0825.4	3	0815.0	0825.4	3			IVP	
			WEIS				0846.4	0848.4	3				IIIG
			BLEN	0847.9	0848.1	3	0847.9	0848.1	3				III
			BLEN	0911.3	0911.5	2							IIIG
			BLEN	0959.5	0959.8	2	0959 5	0959.8	2				III
			BLEN				1143.8	1143.9	2				III
			BLEN	1203.3	1213.4	2	1203.3	1213.4	2				IDC
			BLEN				1319.4	1319.6	2				III
			BLEN	1333.7	1337.2	2							IDC
			PALE				1916.2	1917.6	2				V
			PALE				1934 5	2005.1	1				S
			PALE				1934.5	1934.7	1				III
			CULG				2016	2357	1				N,RS,DP
	2016	2400	CULG				2016	2030	1				IIIS
			CULG				2016	2400					IS W
			PALE				2019.3	0355.0	1				B
			PALE				2019 3	0000.0	1				B
			PALE				2019.3	0355.0	1				B
			CULG				2020.5	2022	2				IIIGG
			CULG				2028	2251	1				N,DP
			CULG				2030	2400					IIIS W
			CULG				2105.5	2106	3	2105.5	2106	1	IIIB
			CULG				2107	2400	1				IIIN
			CULG				2118 5	2120	2	2119	2119.5	1	IIIG
			CULG				2147	2148	3	2147		1	IIIB,V
	2150	2400	MANI										
			CULG				2226.5	2228	3	2226.5	2228	2	IIIG,V
02	0000	0901	MANI										
	0000	0715	CULG				0000	0715					IIIS,W
			CULG				0002	0615	1				IIIN
			CULG				0024	0715					IS,W
			CULG				0101	0715	1				N,RS,DP
			CULG				0111	0111.5	2				IIIG
			CULG				0144		2	0144		1	IIIB
			LEAR				0200.0	1018 0	1				B
			LEAR				0200.0	1018 0	1				B
			LEAR				0200.0	0000.0	1				B
			CULG				0258	0259 5	2				DC
	0647	1451	WEIS				0653	1515	2				IIIN
			WEIS				0657	1435	2				IN
	0712	1508	BLEN	0712 E	1508 D		0712 E	1508 D	3				I,DC,S
			BLEN				0716.9	0716.9	3				III
			BLEN				0729 4	0731.0	2				IIIG
			BLEN	0736.8	0736.9	2							III
			LEAR				0743.7	0755 5	2				S
			BLEN				0745.4	0745.8	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
02			BLEN	0747.8	0748.2	2	0747.8	0748.2	2				IIIG
			BLEN	0828.4	0828.8	2							IIIU
			LEAR				0843.4	0844.2	2				CONT
			BLEN	0947.5	0948.0	2							IIIG
			BLEN	0949.0	0949.2	2							IIIU
			BLEN				1013.6	1015.0	2				IIIG
			BLEN	1104.6	1108.7	3	1106.6	1108.0	3				DCIM
			WEIS				1104.9	1					
			WEIS				1105	1108	2				RS
			BLEN				1116.2	1121.6	2				IIIG
			BLEN	1119.0	1119.6	3	1119.0	1119.6	3				DCIM
			WEIS				1119.1	1122.1	3				RS
			BLEN				1226.9	1228.4	2				IIIG
			BLEN	1233.5	1235.4	1							DCIM
			BLEN	1238.6	1238.8	1							DCIM
			BLEN	1239.7	1240.6	3	1240.0	1241.3	3				DCIM
	1140	1600	DWIN	1239.8	1240.7	3						IV	
			WEIS				1239.9	1242.1	2				IIIG
			BLEN				1249.7	1249.7	1				III
			BLEN	1304.6	1308.9	3	1308.0	1308.6	2				DCIM,IIIG
			WEIS				1304.7	1305.7	2				IIIG
			WEIS				1341.3	1355.4	3				IIIGG
			BLEN	1347.5	1405.0	2	1347.5	1405.0	2				IIIG,DCIM
			DWIN	1348.0	1348.4	1							IIIG
			BLEN	1449.1	1454.7	2	1449.7	1454.7	2				DCIM,IIIG
			DWIN	1449	1454	1						IV	
			BLEN	1456.8	1456.8	1							IIIB
			BLEN	1504.7	1506.4	1							IIIG
	1504	1522	WEIS										
			PALE				1754.8	0353.0	1				B
			PALE				1754.8	0000.0	1				B
			CULG				2010	2400					IS,W
	2010	2400	CULG				2010	2400					IIIS,W
			CULG				2019	2019.5	1				IIIG
			CULG				2110	2206	1				IIIN
			CULG				2133	2133.5	2	2133	2133.5	2	IIIB
	2152	2400	MANI										
			CULG				2210	2211	1	2210	2211	1	IIIG
			CULG				2216		1	2216		1	IIIB
			CULG				2224	2227	1				N,RS,DP
			CULG							2241	2321		IIIN,W
			CULG				2253.5	2254	1	2253.5	2254	1	IIIG
			CULG				2256.5	2257	1	2256.5		2	IIIG
			CULG				2257.5	2306	1			II	
			CULG							2339.5		1	IIIB
			CULG				2344.5	2353.5				II,	W
			CULG				2352	2353.5	1	2352	2353.5	1	IIIG
03	0000	0900	MANI										
	0000	0716	CULG				0000	0716					IIIN,W
			CULG				0000	0716					IN,W
			CULG							0007.5			IIIB,W
			CULG				0009	0010.5	2	0009.5	0013.5	2	IIIGG,V
			CULG							0114	0436		IIIN,W
			CULG				0119	0119.5	1				IIIG
			CULG				0124	0127.5	2	0124	0128.5	2	IIIGG,V
			LEAR				0200.0	0000.0	1				B
			LEAR				0206.0	1018.8	1				B
			LEAR				0223.0	0223.6	2				V
			CULG				0223	0223.9	1	0223	0224	1	IIIG
			CULG				0351		1	0351		1	IIIB
			CULG				0412	0620	1				IIIN
	0648	1522	WEIS				0654	1521	2				IIIN
	0700	1540	DWIN										
			CULG				0713.5	0716	2				IIIGG
			LEAR				0713.7	0715.0	2				CONT
			LEAR				0713.7	0715.0	2				CONT
	0720	1505	BLEN				0740.1	0800	1				I
			LEAR				0741.4	0743.4	2				CONT
			LEAR				0741.4	0743.4	2				CONT

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
03			BLEN				0741 4	0746.8	2				IIIG
			BLEN	0800.8	0803.4	3	0800.8	0803 2	3				IIIGG
			BLEN				0810.4	0811 5	2				IIIGG
			BLEN	0850.0	0912.0	1	0850.0	0912.0	1				I
			WEIS				0909	1513	1				IN
			BLEN				0958 8	0959 9	1				IIIG
			BLEN				1022.3	1023.4	1				III
			BLEN	1240.0	1455 D	1	1124.0	1455 D	1				I
			BLEN				1418.7	1419.2	1				III
			BLEN				1426.6	1427.1	2				IIIG
			BLEN				1439.9	1445.3	2				IIIGG
			BLEN	1440.7	1445.2	2							DCIM,III
			WEIS				1440	1444 8	3				IIIGG,V
			BLEN	1453 0	1505.0	2							DCIM
			PALE				1801.1	1804 3	2				V
			PALE				1801.1	1804 3	2				V
			CULG				2016	2400					IN,W
	2016	2400	CULG				2016	2400					IIIN,W
			CULG							2124.5		1	IIIB
	2150	2400	MANI										
			CULG				2205	2205.5	1				IIIG
04	0000	0903	MANI										
			CULG				0000	0716					IN,W
	0000	0716	CULG				0000	0716					IIIN,W
			CULG				0025.5	0026		0025.5	0026		IIIG,W
			CULG				0027	0027.5	1	0027	0027.5	1	IIIG
			CULG				0029		3	0029		3	IIIB
			CULG							0136	0321	1	IIIN
			CULG				0156.5	0200	1	0159.5		1	IIIG
			CULG				0228	0232.5	3	0228	0232 5	2	IIIGG
			CULG				0333	0335.5	2	0334	0335	1	IIIGG,U
			CULG				0508	0509	1				IIIG
			CULG				0510.5	0546.5	2			II	
			CULG				0512.5		1				IIIB
			CULG				0514	0527	1			IV,	P
			CULG				0521.5	0522	1				IIIG
	0720	0900	BLEN										
	0651	1520	WEIS				0740	1519	2				IIIN
			WEIS				1038.3	1041.9	3				IIIGG,V
	0700	1147	DWIN	1138 5	1138.8	2							IIIG
			WEIS				1501.6	1505.9	2			II	
	2016	2400	CULG				2016	2044					IIIN W
			CULG				2022	2236					IS,W
			CULG				2044	2056	1				IIIS
			CULG				2056	2109	2				IIIS
			CULG				2109	2218	1				IIIS
			CULG				2218	2345					IIIN,W
			CULG				2348.5	2354.5	3	2349.5	2352 5	3	IIIGG,V,U
	2150	2400	MANI							2349.4-	2350.9	1	III
			CULG				2354	2400					IIIS,W
			CULG				2358	2400	1			II	
05	0000	0716	CULG				0000	0002				II,	W
			CULG				0000	0138					IIIS,W
			CULG				0017	0018	2	0017.5	0018	1	IIIG
			CULG				0023	0024	2	0023	0023.5	2	IIIG
			CULG				0039.5	0040 5	2				IIIG
			CULG							0043	0110		SWF W
			CULG				0054	0115	1				IIIN
			CULG				0138	0716					IIIN,W
			CULG							0203	0220		SWF,W
			MANI							0210.4	0210.6	1	III
			MANI							0218.1	0219.1	2	III
			CULG				0218	0716					IN,W
			CULG				0223.5	0224	1				IIIG,U
			CULG				0323.5	0326.5	1				IIIGG
			CULG				0335.5	0336	1	0335.5	0336	1	IIIG
			CULG				0347.5		2	0347.5		1	IIIB
			CULG				0517.5	0518.5	1				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
05	0000	0900	MANI							0533.1-	0533.3	1	III
			CULG				0533	0534.5	3	0533	0534	3	IIIG
	0653	0929	WEIS				0657	1441	3				IIIN
			CULG				0706	0706.5	1				IIIG
	0933	1528	WEIS				0709	1510	2				IN
	0720	1530	BLEN				0720 D	1530	1				I
			BLEN				0743.1	0743.5	2				IIIG
			BLEN				0758.2	0800.6	2				IIIGG
			BLEN				0812.5	0820.0	2				IIIGG
			BLEN				0827 5	0827.5	1				IIIB
			BLEN	0829.4	0829.6	2	0829.4	0829.6	2				IIIG
			BLEN				0855.0	0900.1	2				IIIGG
			BLEN				0915.4	0917 7	2				IIIG
			BLEN	0919.5	0919.7	1	0919.5	0919.7	1				DCIM
			BLEN	0959.4	0959.8	1							DCIM
			BLEN	1016.2	1025.4	1	1016 2	1025.4	1				IIIGG
			BLEN	1030.0	1032.4	3	1030.0	1032.4	3				IIIGG
			BLEN	1052.6	1053.5	2	1052 6	1053.5	2				IIIGG
			BLEN	1109 5	1109.9	1							DCIM
			BLEN	1159.5	1200.7	1	1149.3	1201.4	3				IIIGG,DCIM
			BLEN				1206.8	1207.2	1				IIIG
			BLEN	1241.2	1242.2	1	1236.9	1242.2	2				IIIG
			BLEN	1301 1	1302.7	1							DCIM
			BLEN				1304.4	1304.8	1				IIIG
			BLEN				1326.5	1327.0	2				IIIGG
			BLEN	1439.8	1440.0	2	1439.8	1440.0	2				IIIG
	1047	1540	DWIN	1525	1528	1						IV	
			PALE				1710 0	0000.0	2				B
			PALE				1710.0	0350.0	2				B
			PALE				1710.0	0000.0	2				B
			PALE				1743.9	1744.0	3				CONT
			CULG				2016	2400					IS,W
	2016	2400	CULG				2016	2208					IIIS,W
			CULG				2027	2400	1				IIIN
			CULG				2031.5	2032	3				IIIG
			CULG				2031	2400	2				IIIG N
			CULG				2035	2037	2				IIIG V
			CULG				2036		3				IIIB
			CULG				2103 5	2104	3				IIIG
			CULG				2105.5	2107.5	3	2105 5	2106.5	2	IIIGG,V
			PALE				2105.6	2107.7	3				V
			CULG				2109.5		2				IIIB
			CULG				2142.5	2143.5	3	2143	2143.5	2	IIIG,V
			CULG				2143	2158	3	2143	2158	2	IIIGG,V,N
			PALE				2148.6	2157.7	3			II	
			PALE				2148.6	2157.7	3			II	
			CULG							2149	2155		SWF,W
			CULG				2205	2206	2	2205	2206	1	IIIG
			CULG							2205	2400	1	IIIN
			CULG				2239	2301	3	2240	2301	2	IIIG,N
			CULG							2244	2315	1	SWF
	2200	2400	MANI							2300 0-	2300.3	1	III
			MANI							2300.0	2300.3	1	III
			CULG				2317	2334	3	2317	2334	3	IIIG,N
	2200	2400	MANI							2347 5-	2348.5	1	III
			MANI							2347 5	2348.5	1	III
			CULG				2347	2354	3	2347 5	2353.5	3	IIIG,V
			CULG							2347	2357	1	SWF
			CULG				2347	2400	2			II	
06	0000	0716	CULG				0000	0014	1			II	
			CULG				0001	0716					IIIN,W
			PALE				0006.5	0014.6	2				CONT
			CULG							0008	0518	1	IIIN
			CULG				0031	0716	2				IIIN
	0000	0902	MANI							0101.5-	0101.7	1	III
			CULG				0101	0102 5	3				IIIG,V
			MANI							0137 6-	0137 7	1	III
			CULG				0137	0714	3	0137	0627	3	IIIG,V,N
			MANI							0149.6-	0149.9	1	III

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			MANI							0200.0-	0200.8	1	IIIG
			MANI							0210.4-	0210.6	1	III
			MANI							0218 1-	0219.1	2	III
			LEAR				0218.5	0220.6	3				CONT
			LEAR				0228.8	0234.2	3				CONT
			MANI							0229.3-	0232.1	2	IIIG
			MANI							0255.3-	0255.5	1	III
			CULG				0305	0555					IS,W
			CULG							0316	0327	1	SWF
			MANI							0327.5-	0327.7	1	III
			MANI							0414.8-	0415.5	1	III
			CULG							0509	0642	1	SWF
			CULG				0516	0538	2			II	
			LEAR				0521.7	0612.2	2			IV	
			CULG				0524	0546	1			IV	
			CULG				0546	0607				IV	W
			LEAR				0624.9	0627 5	3				CONT
			MANI							0625.2-	0626.9	1	IIIG
	0653	1518	WEIS				0658	1518	3				IIIS
			WEIS				0701	1440	1				IN
			MANI							0712 4-	0713 8	1	IIIG
	0700	1552	DWIN	0712.9	0715.5	2							IIIG
			DWIN	0719.3	0719 4	1							IIIG
	0725	1520	BLEN				0725.2	0726.2	2				IIIG
			BLEN				0738.7	0744.2	2				IIIG
			DWIN	0759 3	0759.4	2							IIIG
			BLEN	0759.6	0759.8	1	0754.0	0802.0	2				IIIG
			MANI							0801.9-	0802.2	1	III
			BLEN	0824.7	0847.7	2	0816.5	0839.4	2				IIIGG,DCIM
			WEIS				0824.7	0835.0	3				IIIGG,V
			LEAR				0825.3	0831.2	3				CONT
			DWIN	0825.5	0831.5	2						IV	
			MANI							0827.3-	0827 8	1	III
			DWIN	0833.5	0834.1	2							IIIG
			WEIS				0837.5	0842 2	3				IIIGG
			DWIN	0838.2	0840.0	2							IIIG
			MANI							0838.2-	0839.0	1	III
			DWIN	0847 0	0847.8	2						IV	
			BLEN	0857.7	0900.1	2	0858.3	0900.1	2				IIIGG
			BLEN				0955.9	0956 0	1				IIIB
			BLEN				1006.7	1006.7	1				IIIB
			BLEN	1101.0	1103.6	2	1035.0	1107.5	2				IIIGG
			DWIN	1101.2	1101.5	2							IIIG
			DWIN	1102.7	1103.8	2							IIIG
			BLEN				1119.9	1120.4	1				IIIG
			BLEN	1139.2	1146.5	2	1137.4	1146.5	2				IIIG
			BLEN				1157.8	1205.8	2				IIIG
			BLEN	1224.2	1227.5	1							DCIM
			DWIN	1245.2	1246.0	2							IIIG
			BLEN	1245.3	1248.0	2							DCIM,RS
			BLEN	1315.7	1321.3	1	1313 7	1321.3	1				IIIG,DCIM
			BLEN	1349 8	1349.8	2	1347.7	1350 0	2				IIIG
			BLEN				1401.5	1401.6	2				IIIB
			BLEN	1414.4	1504.2	3	1414.4	1504.2	3				IIIGG,DCIM
			WEIS				1445.3	1455.0	3				IIIGG,V
			DWIN	1445.3	1452.0	2						IV	DCIM
			BLEN	1449.2	1450.4	3	1449.2	1450.4	3				V
			WEIS				1453.0	1509 0	2			II	HARM
			DWIN	1511.0	1552	3						IV	F
			BLEN	1511.6	1511.9	2							UNCLF
	2016	2400	CULG				2016	2250	2				IS,C,DC
			CULG				2019	2143	2				IIIS
			CULG				2143	2400					IIIS W
	2156	2400	MANI										
			CULG				2211.5	2212	2				IIIG
			CULG							2230	2400	1	IIIN
			CULG				2231.5	2232	1	2232		1	RS,DP
			CULG				2236.5	2238	3	2237	2237.5	2	IIIG,V
			CULG							2240	2400	1	SWF
			CULG				2250	2400	1				IS

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
06			CULG				2259	2259.5	3	2259	2259.5	3	IIIG
07	0000	0345	CULG				0000	0215	1				IS,DC
			CULG							0000	0345	1	SWP
			CULG				0000	0345	1				IIIS
			CULG				0002	0014.5	2	0002	0014.5	2	IIIG N
			CULG				0111		2				IIIB
			CULG				0116		2				IIIB
			LEAR				0200.0	1024.0	1				B
			LEAR				0200.6	0000.0	1				B
			LEAR				0332.9	0339.6	3				CONT
			LEAR				0332.9	0337.1	2				CONT
			PALE				0333.1	0339.7	2				CONT
	0000	0900	MANI							0333 3-	0333.5	1	III
			MANI							0333.3	0333.5	1	III
			CULG				0333	0340	3	0333 5	0340	2	IIIGG,N
	0000	0900	MANI							0339.2-	0339.6	1	III
			MANI							0339.2	0339.6	1	III
			LEAR				0403.0	0403 5	2				V
	0000	0900	MANI							0458.7-	0458.9	1	III
			MANI							0458.7	0458.9	1	III
	0504	0715	CULG				0504	0715					IIIN,W
			LEAR				0542.8	0544 2	2				CONT
			CULG				0543	0544	3	0543	0544	3	IIIG,V
			CULG				0620	0620.5	2	0620	0620.5	1	IIIB
			LEAR				0632.2	0639 4	2				CONT
			CULG				0632	0633	3	0632	0633	2	IIIG
			CULG				0637.5	0639	3	0637.5	0638	2	IIIGG
	0655	1231	WEIS				0658	1500	1				IN
	1240	1517	WEIS				0710	1512	3				IIIN
	0735	1520	BLEN	0735 E	1520 D	1	0735 E	1520 D	1				I
			LEAR				0803.0	0808.4	2				CONT
			BLEN				0806.4	0808.3	1				IIIG
			BLEN				0926.6	0931.0	2				IIIG,U
			BLEN	0934 2	0934.2	1							IIIB
			BLEN				0943.6	0943.8	1				IIIG
			BLEN	0951.0	1020.2	2	0951.0	1020.2	2				IIIGG,RS
			BLEN	1029.9	1106.2	2	1029.9	1106.2	2				IIIGG,RS
			BLEN	1116.3	1119.6	2	1113.6	1119.6	2				IIIGG,U
	0706	1600	DWIN	1119.4	1119 5	2							IIIG
			BLEN	1133.8	1147.2	2	1133.8	1147.2	2				IIIGG
			BLEN	1151.9	1151 9	1							IIIB
			BLEN	1208.1	1208.3	1							IIIG,RS
			BLEN	1211.3	1218.7	2	1215.8	1216.7	3				IIIGG
			BLEN				1244.3	1244.8	2				IIIG
			BLEN	1257.1	1257.2	2	1257.1	1257.2	2				IIIG
			BLEN	1336.6	1340.5	3	1334.7	1340.5	3				IIIGG,RS
			BLEN	1401.4	1402.3	1							DCIM
			BLEN	1422 4	1422.5	2							IIIG
			BLEN	1434.0	1437.8	2	1434.0	1434.4	2				IIIG
			PALE				1835.2	1837.2	2				V
			PALE				1914.1	1957.1	1				S
			CULG				2016.5		2				IIIB
	2016	2400	CULG				2016	2400					IIIN,W
			PALE				2037 4	203 7.5	1				III
			CULG				2037		2				IIIB
			CULG				2057	2159	1				IIIN
			CULG							2124	2303		IIIN,W
			CULG				2134		1				RS,DP
			CULG				2140	2140.5	2	2140	2140.5	2	IIIB
	2157	2400	MANI										
			CULG				2311.5	2313.5	2	2311.5	2314	2	IIIGG
			PALE				2311.7	2313.3	2				CONT
			CULG				2316		1	2316	2316.5	1	IIIB
08	0000	0716	CULG				0009	0145		0009	0540		IIIN W
			CULG				0045	0046	1	0045	0046	1	IIIG
			CULG				0103.5	0107	3	0104	0107.5	3	IIIGG,V
	0000	0900	MANI							0105.8-	0106.0	1	III
			CULG				0111	0711	1				N,RS,DP

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08			CULG							0116	0146	3	SWF
			CULG				0117.5		1	0117.5		1	IIIB
			CULG				0117.5	0129.5	2				II, H
			CULG				0128	0250					IV, W
			CULG				0145	0223					IIIS,W
			CULG							0202	0202.5	1	IIIB
			CULG							0206	0212	1	SWF
			CULG				0209	0216	1				IIIS
			CULG				0220	0652	2	0220	0415	2	IIIN
			CULG				0223	0716					IIIN,W
			CULG				0422	0716					IS,W
	0000	0900	MANI							0452.4-	0453.7	1	III
			CULG				0452	0453.5	3	0452	0453	2	IIIGG,U
			CULG				0502	0503	2				UNCLF
	0725	1317	BLEN	0725 E	1317 D	2	0725 E	1317 D	2				I
	0606	1515	WEIS				0733	1512	1				IN
			BLEN	0734.2	0735.9	2	0734.2	0736.9	2				IIIGG
			BLEN	0810.7	0817.8	3	0810.7	0817.8	3				IIIGG,DCIM
	0702	0836	DWIN	0811.5	0814.8	1							IV DCIM
			BLEN	0830.0	1025.0	2	0830.0	1025.0	3				C,DCIM
			WEIS				0840	1115	2				CONT
			BLEN	0849.4	0914.5	3							IV
	0850	1600	DWIN	0850	1016	2							IV P-F
			BLEN	0940.0	1010.0	3							UNCLF
	0850	1600	DWIN	1046.4	1046.7	2							IIIG
			DWIN	1117.5	1121.1	3							IIIG
			DWIN	1121.1	1125	3							IV
			WEIS				1121.3	1123.0	2				IIIG
			BLEN	1121.4	1126.0	3	1121.4	1129 0	3				II, DCIM
			DWIN	1122.5	1022.7	2							IIIG
			WEIS				1123.0	1138.0	2				II HARM
			DWIN	1146	1231	2							IV Z
			BLEN	1147.0	1217 0	2							II, RS
			BLEN	1206.7	1213.7	3	1208.7	1213.7	3				IIIG
			BLEN	1230.7	1230.8	2							IIIG
			BLEN	1314.6	1314.8	2							IIIG
			WEIS				1348	1515	2				IIIN
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2016	2400					IS,W
			CULG				2018	2400	1				IIIN
			CULG				2019	2041.5	3	2019.5	2041.5	2	IIIG,V,N
			CULG				2036	2400	1	2036	2400	1	N,RS,DP
			CULG							2121	2400		IIIN,W
	2148	2400	MANI										
			CULG				2156.5	2157	1	2156 5	2157	1	IIIG,U
			CULG				2205	2208 5	2	2205	2209	2	IIIGG
			CULG				2234						DP,W
			CULG				2310	2310.5	1	2310	2310 5	2	IIIG
			CULG							2332	2350	3	SWF
09	0000	0900	MANI										
			CULG				0000	0716	1	0000	0256	1	N,RS,DP
	0000	0716	CULG				0000	0035	1				IS
			CULG				0000	0716		0000	0430		IIIS W
			CULG				0001	0001.5	2	0001	0001.5	2	IIIG
			CULG				0035	0250					IS W
			CULG				0052	0055.5	1	0052	0056	2	IIIGG,V
			CULG				0146.5	0149	3	0146.5	0149.5	3	IIIGG,V
			CULG				0205.5	0206.5	2	0205.5	0206.5	2	IIIG
			CULG				0221	0716	1				IIIN
			CULG				0250	0716	1				IS
			CULG				0250	0716	1				N DC
			CULG				0303	0308	2				IIIGG,V
			CULG				0305.5	0323	3	0311	0313	2	II H
			CULG							0305	0315	3	SWF
			CULG				0312.5	0313	1	0312.5	0313	2	IIIG
			CULG				0324	0716					IV, W
			CULG				0424.5	0442	3	0424.5	0442	2	IIIG,V,N
			CULG				0546.5	0549.5	2	0546.5	0549	2	IIIG,V
			CULG				0556.5	0557	2				IIIG

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09			CULG				0602	0605	2	0603	0604	2	IIIG,V
			CULG				0605	0612	1			II	
			CULG							0605	0610	1	SWF
			CULG				0623	0716	1				N,DP
	0658	1514	WEIS				0722	1513	2				IN
	0730	1500	BLEN	0730 E	1500 D	2	0730 E	1500 D	2				I
			WEIS				0740	1436	2				IIIS
			BLEN				1008.8	1009.2	2				IIIG
			WEIS				1008 8	1009 6	2				IIIG U
			WEIS				1029 7	1030.7	2				IIIG,U
			BLEN	1225.4	1225.9	1							IIIG
			BLEN				1228.6	1229 7	2				IIIG
	0702	1600	DWIN	1352.8	1354.0	2							IIIG
			BLEN	1353.0	1357.7	2	1353.0	1357.7	2				IIIGG
			WEIS				1408.3	1411 3	3				IIIGG
			BLEN				1410.1	1410.5	2				IIIG
			WEIS				1438.9	1442.1	2				IIIGG
			BLEN	1445.2	1448.3	3	1445.2	1448.3	3				IIIGG
			WEIS				1445.5	1446.7	3				IIIGG
			DWIN	1445.7	1446.6	2							IIIG
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2016	2400	2				IS,C,DC
			CULG				2016	2400	1				N,RS DP
			CULG				2025	2306	1				N,DP
			CULG				2047	2400	1				IIIN
			CULG				2124	2126.5	3	2124.5	2126.5	2	IIIG V
			CULG				2127.5	2129					POSS II,W
			CULG							2128	2400		IIIN W
	2151	2400	MANI										
			CULG				2219.5	2220.5	2	2219.5	2220.5	1	IIIG
			CULG				2232	2233	1	2232	2233	1	IIIG
			CULG				2258		1	2258		2	IIIB
			CULG				2351	2351.5	2	2351	2351.5	1	IIIG
10	0000	0716	CULG				0000	0318					IIIS,W
			CULG				0000	0512	1				IS,C,DC
			CULG							0000	0445		IIIN,W
			CULG				0000	0716	1				N,RS,DP
			CULG				0011.5	0716	1				N DP
			CULG				0024.5	0025	1	0024.5	0025	1	IIIB
			CULG				0041.5	0043	3	0042	0043	3	IIIG
			CULG				0049	0050	2	0049	0056	2	IIIG
			LEAR				0200.0	1027.0	2				B
			LEAR				0200.0	0000.0	1				B
			LEAR				0200.0	0000.0	2				B
			CULG				0236.5		1				IIIB
			LEAR				0236.6	0238.6	2				CONT
			CULG				0237.5	0238.5	3	0237.5	0238.5	3	IIIG
	0000	0853	MANI							0238.1-	0238.8	1	III
			CULG				0252	0255	1				IIIG
			LEAR				0317.8	0318.1	2				CONT
			CULG				0318	0716	2				IIIN
			CULG				0318	0716	1				IIIS
			LEAR				0357.6	0402.7	2				CONT
			CULG				0359.5	0400	3	0359.5	0400.5	3	IIIG
	0000	0853	MANI							0400.1-	0400.3	1	III
			MANI							0400.1	0400.3	1	III
			LEAR				0428 5	0428.7	2				V
			LEAR				0428 5	0428.7	2				V
			CULG				0512	0716	2				IS,C,DC
			LEAR				0601.7	0608.3	2				CONT
			CULG							0642	0650	2	SWF
			CULG				0643	0706	2			II	
			LEAR				0645.0	0703.5	1			II	
			LEAR				0645 0	0703.5	1			II	
			LEAR				0645.0	0703.5	1			II	
			LEAR				0653.5	0703.5	1			II	
	0700	0800	WEIS				0703	1511	2				IC DC,CONT
	1020	1512	WEIS				0706	1512	2				IIIS
	0710	1530	DWIN	1212.0	1213 0	2							IIIG

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10			DWIN	1218.3	1219.0	1							IV
			DWIN	1247.2	1248.0	2							IIIG
			WEIS				1314.2	1316.5	2				IIIG,V
			DWIN	1340.9		2							IIIB
			WEIS				1443.8	1444.2	3				IIIGG
			WEIS				1449.4	1450.6	3				IIIG
			DWIN	1521.3	1521.4	2							IIIG
			DWIN	1526.5	1527.1	1							IV
			CULG				2016	2400					IS,W
	2016	2400	CULG				2016	2400					IIIS W
			CULG				2016	2400	1				N,RS,DP
			CULG				2028	2326	1				IIIN
			CULG				2114.5	2116	3	2114.5	2116	2	IIIG,V
			CULG				2148		1	2148	2148.5	1	IIIB
			CULG				2151	2153	3	2152	2152.5	2	IIIGG
			CULG				2154.5	2155	2	2154 5	2155	1	IIIG
	2155	2400	MANI										
			CULG				2158	2159	3	2158	2159	3	IIIGG
			CULG				2216.5	2218	2	2216.5	2218.5	2	IIIGG
			CULG				2247.5	2248	1	2247 5	2248.5	1	IIIG
			CULG				2302		2				IIIB
			CULG				2304	2304.5	3	2304	2304.5	2	IIIG,V
			CULG				2317 5	2318	2	2317.5	2318	1	IIIG
			CULG							2319	2319.5	1	IIIG
11	0000	0716	CULG				0000	0716					IS,DC W
			CULG				0000	0716	1				N,RS,DP
			CULG				0000	0716					IIIS,W
			CULG				0053		1				DP
			MANI							0102.8	0103 3	1	III
	0000	0657	MANI							0102.8-	0103.3	1	III
			CULG				0102	0104	3	0102	0104.5	3	IIIGG,V
			CULG				0110.5		1	0110.5		1	IIIB
			MANI							0127.6	0130.0	1	III
			LEAR				0200.0	0900.0	1				B
			LEAR				0200.0	0000.0	1				B
			CULG				0232.5		2	0232.5		1	IIIB
			CULG				0515.5	0516	2	0515.5		1	IIIG
			LEAR				0515.6	0516.6	2				V
			CULG				0601.5	0606	2				IIIG
			LEAR				0601.7	0608.3	2				CONT
			CULG				0636.5		2				IIIG
	0701	1511	WEIS				0705	1508	1				IS DC
	0718	0853	MANI										
			WEIS				0733	1544	2				IIIN
	0735	1530	BLEN	0742.5	0743.0	2	0742.5	0743.0	2				IIIG
			BLEN				0810 4	0810.8	2				IIIG
	0705	1253	DWIN	0843.9	0844.9	3							IIIG
			BLEN	0844.1	0844.4	2							DCIM
			BLEN	0910.2	0910.8	2	0910.2	0910.8	2				IIIG
			BLEN	0915 E	1530 D	2	0915 E	1530 D	2				IDC
			BLEN	1048 6	1049.0	2							DCIM
			DWIN	1048 7	1049.0	2							IIIG
			BLEN				1106.7	1107.2	2				IIIG
			DWIN	1115.6	1116 9	2							IIIG
			BLEN				1135.7	1136.2	2				IIIG
			BLEN	1144.2	1144.6	2	1144.2	1144.6	2				IIIG
			BLEN	1245.2	1255.3	2							DCIM
			BLEN				1300.7	1311.7	2				IIIGG
			WEIS				1311.1	1312.1	3				IIIG
			BLEN				1328.2	1330.3	2				IIIG
			WEIS				1329.6	1330.3	3				IIIG
			BLEN				1403.0	1403.4	2				IIIG
			BLEN				1442.6	1443.0	2				IIIG
			PALE				1925.5	1925.9	1				III
	2016	2400	CULG				2016	2400					IS W
			CULG				2052	2052.5	1				IIIB,U
			CULG				2054	2400					IIIN,W
	2150	2400	MANI										
			CULG				2201.5	2203	2	2202	2203	1	IIIG

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11			PALE				2201.9	2210.5	1				CONT
			CULG				2209.5	2210 5	2	2209.5	2210.5	1	IIIG,U
			CULG				2313		1				IIIB
12	0000	0600	CULG				0000	0125					IN,W
			CULG				0006.5	0011					IIIG,W
			CULG				0029	0600					IIIN,W
			CULG				0125	0600					IS,W
			CULG				0127.5	0130	3	0127.5	0131	3	IIIGG,V
	0000	0901	MANI							0127.6-	0130.0	1	III
			MANI							0127.6	0130.0	1	III
			PALE				0130.6	0000.0	1				B
			PALE				0130.6	0346 0	1				B
			PALE				0130.6	0000.0	1				B
			CULG				0131.5	0140	1			II	
			LEAR				0200.0	0000.0	1				B
			LEAR				0200.0	1028 0	1				B
			LEAR				0200.0	1028.0	1				B
			LEAR				0200.0	1028.0	1				B
			LEAR				0220.3	0221.2	2				CONT
			CULG				0220	0221	2				IIIG
			CULG				0306	0307	1				IIIG
			CULG				0346	0349	2				IIIG
			LEAR				0528 8	0533.2	2				CONT
			LEAR				0528.8	0533.2	2				CONT
			LEAR				0528.8	0533.2	2				CONT
			LEAR				0528.8	0533.2	2				CONT
			CULG				0529	0530	2	0529	0529.5	1	IIIG
			CULG				0531.5		1				IIIB
	0645	0716	CULG										
	0703	1319	WEIS				0706	1509	2				IS
	1325	1509	WEIS				0734	1553	2				IIIN
			LEAR				0740.7	0741.0	2				CONT
			LEAR				0740.7	0741 0	2				CONT
			LEAR				0740.7	0741.0	2				CONT
			LEAR				0740.7	0741 0	2				CONT
	0730	1530	BLEN				0916.7	0917.0	3				IIIG
			WEIS				0916.7	0917.1	3				IIIG
	0750	1520	DWIN	1041.8	1042.0	2							IIIG
			DWIN	1043.2	1043.5	2							IIIG
			PALE				1933.9	1950.0	2				S
			PALE				1950.0	0346.0	1				B
			PALE				1950.0	0000.0	1				B
	2016	2400	CULG				2022	2041					IN,W
			CULG				2029.5	2030	2				IIIB
			CULG				2051 5		1				IIIB
			CULG				2052.5	2053	1				IIIG
	2156	2400	MANI										
			CULG				2212.5	2218	1	2215	2215.5	1	IIIN
			CULG				2226	2300					IIIS,W
			CULG				2228.5	2233.5	1				IIIGG
13	0000	0900	MANI										
	0000	0716	CULG				0010	0716					IIIN,W
			CULG				0025.5	0026	1				IIIG
			CULG				0030	0054					IN,W
			CULG				0046.5	0047.5	1				IIIG
			CULG				0058			0058			IIIB,W
			CULG				0125.5	0131					UNCLF,W
			LEAR				0200.0	1028.0	1				B
			LEAR				0200.0	1028.0	1				B
			LEAR				0227.7	0228.1	2				V
			LEAR				0302.8	0305.7	2				CONT
			CULG				0303.5	0304	2				IIIG
			CULG				0305	0306	1				IIIG
			CULG				0329		1				IIIB
			CULG				0349		1				IIIB
			CULG				0501		1				IIIB
			LEAR				0702.5	0703.0	2				CONT
			CULG				0702.5	0703	2				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
13	0705	1508	WEIS				0713	1311	2				IN
			WEIS				0734	1444	2				IIIN
	0730	1500	BLEN				0747.2	0749.6	3				IIIGG
			WEIS				0747.3	0750.4	3				IIIGG
			LEAR				0747.4	0748.7	1				CONT
			BLEN				1008.2	1009.0	3				IIIG
			WEIS				1008.5	1009 3	3				IIIG
			LEAR				1008.6	1008.9	1				III
			LEAR				1008.6	1008.9	1				III
			BLEN				1122.1	1122.2	1				IIIB
			BLEN				1248.2	1258.3	2				IIIGG
	0700	1520	DWIN	1510.2	1512.6	1						IV	DCIM
	2016	2400	CULG				2037	2106					IN,W
			CULG				2049.5		1				IIIB
			CULG				2114	2114.5	2				IIIG
			CULG				2125	2400					IIIN,W
			CULG				2128	2129	2				IIIG
			PALE				2135.0	0346.0	1				B
			PALE				2135.0	0000.0	1				B
	2153	2400	MANI										
			CULG				2222	2222.5	1				IIIG
			CULG				2225.5	2226	1				IIIG
			CULG				2251	2254	1				IIIN
14	0000	0901	MANI										
	0600	0716	CULG				0017	0232					IIIN,W
			CULG				0034	0034.5	1				IIIG
			CULG				0232	0245	1				IIIS
			CULG				0508	0716					IIIN,W
			LEAR				0653.6	0654.1	1				V
			LEAR				0653.6	0654 0	1				V
	0706	1505	WEIS				0723	1422	2				IIIN
	0730	1032	BLEN				0847.2	0848.9	3				IIIG
			BLEN				0942.5	0946.1	2				IIIG
	0700	1520	DWIN	1112.6	1113 2	1						IV	
	1315	1530	BLEN				1319.3	1319.3	2				IIIB
	2016	2400	CULG				2016	2400					IIIN,W
	2156	2400	MANI										
15	0000	0900	MANI										
	0000	0716	CULG				0002	0308					IIIN,W
			CULG							0034	0055	1	SWF
			CULG							0201.5	0202.5	2	IIIB,V
			CULG				0536.5	0537					IIIG,W
			LEAR				0536.6	0558.2	1				S
			LEAR				0728.6	0732.2	1				CONT
	0700	1520	DWIN	0752.0	0754.0	2							IIIG
	0707	0910	WEIS				0808.4	0808.6	1				IIIB
	0735	1530	BLEN				0811.7	0812.1	3				IIIG
			WEIS				0811 7	0812.1	3				IIIG
			DWIN	0811.8	0812.0	2							IIIG
	0915	1505	WEIS				1025.3	1025.9	1				IIIG
			WEIS				1027.7	1027.8	1				IIIB
			WEIS				1305.2	1306.7	2				IIIG
			WEIS				1340.6	1340.9	1				IIIG
			WEIS				1343.6	1343.8	1				IIIB
			PALE				2021.5	2025.8	2				V
			PALE				2021.5	2025.8	2				V
	2017	2400	CULG				2021	2043	3				IIIG,N
			CULG				2021	2049	1				IIIS
			PALE				2030.4	2034.4	2				V
			PALE				2030.4	2034.4	2				V
			PALE				2037.2	0344.0	1				B
			PALE				2037.2	0000.0	1				B
			PALE				2037.2	0000.0	1				B
			CULG				2037.5	2040.5	2				II
			CULG				2049	2140					IIIN,W
			CULG				2140	2210	1				IIIS
			CULG				2145	2208	1				IV
			CULG				2147	2206	1	2203	2205 5	1	II

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15	2155	2400	MANI										
			CULG				2208	2235					IV, W
			CULG				2226	2229	2				IIIG V
			CULG				2229.5	2250	3	2232	2246	2	II, H
			CULG				2304.5		1				IIIB
16	0000	0900	MANI										
	0000	0717	CULG				0040	0717					IIIN,W
			CULG				0150	0152.5	1				IIIGG
			CULG				0151 5	0152.5	2	0151.5	0152.5	1	IIIG
			LEAR				0214.7	0225.2	1				S
			LEAR				0214.7	0225.2	1				S
			CULG				0217	0222.5	2				II, H
			LEAR				0219 5	0221.4	1				II
			CULG				0222	0225	2	0222	0222.5	1	IIIGG
			LEAR				0241.7	0246.3	1				CONT
			CULG				0509		1				RS,DP
	0700	0952	DWIN										
			LEAR				0701.3	0702.6	1				CONT
			CULG				0701	0702.5	1				IIIG
	0709	1504	WEIS				0752.3	0752.5	1				IIIB
			LEAR				0958.3	1006.3	1				CONT
			WEIS				0958.5	1010.1	2				IIIGG,RS
			WEIS				1015	1218	1				IN
	1023	1520	DWIN										
			WEIS				1312.7	1214.9	2				IIIG
			WEIS				1349.3	1349.7	1				IIIG
	2017	2400	CULG				2038	2349					IIIN W
	2200	2400	MANI										
			CULG				2231		2				IIIB
			CULG				2349	2400					IIIS,W
			CULG				2354.5	2355.5	1	2354.5	2355.5	1	IIIG
			CULG				2357		1				IIIB
17	0000	0900	MANI										
	0000	0708	CULG				0000	0538					IIIN,W
			CULG							0227	0315		SWP,W
			CULG				0237	0306					UNCLP,W
	0700	1530	DWIN										
	0710	1259	WEIS				0835	1259	2				IIIN
			WEIS				1139.3	1139 8	2				IIIG
			WEIS				1150	1207	3				IIIGG,U
			WEIS				1203.7	1213.0	2				II HARM
	2017	2400	CULG				2115	2400					IIIN W
			CULG				2127	2148					IS,W
			CULG				2142		1				IIIB
			CULG				2149		2	2149		1	IIIB
	2156	2400	MANI										
			CULG				2247		1	2247		1	IIIB
			CULG				2334.5		1	2334.5		1	IIIB
18	0000	0900	MANI										
	0000												
		0717	CULG				0000	0242					IIIN,W
			PALE				0007.1	0008.2	1				CONT
			CULG				0007	0008	2	0007	0008	2	IIIG
			LEAR				0202.4	0207.4	2				CONT
			CULG				0205 5		3	0205.5		2	IIIB
			PALE				0205.5	0205.7	1				III
			CULG				0206.5		1				IIIB
			CULG				0240	0540					IN,W
			LEAR				0242.6	0300.2	2				S
			LEAR				0242.6	0006.0	2				S
			CULG				0242	0300	1	0242	0254	1	IIIS
			CULG				0244	0246	2	0244.5	0246	2	IIIGG
			CULG				0300	0717					IIIN,W
			LEAR				0336.6	0338.6	1				V
			CULG				0357		1				IIIB
			CULG				0431	0432	1				UNCLP
	0700	1325	DWIN	0759.9		1							B
			DWIN	1014.6	1015.6	1							IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18	0945	1501	WEIS				1105.2	1110.3	2				IIIGG
			WEIS				1121	1443	2				IN
			WEIS				1313.5	1317.0	2				IIIGG
			DWIN	1321.0	1322.5	1							IIIG
			WEIS				1321.2	1325.5	2				IIIGG
	2017	2400	CULG				2136	2141					IIIN,W
	2200	2400	MANI										
			CULG				2250	2341					IN,W
19	0000	0901	MANI										
	0000	0658	CULG				0033.5	0034					I W
			CULG				0034.5	0036					IIIG,W
			CULG				0039						IIIB,W
			CULG				0301						IIIB,W
			CULG				0320.5	0323	1	0321.5	0323.5	2	IIIG,V
			CULG				0431	0658					IIIN,W
			CULG				0640	0640.5	3	0640	0640.5	1	IIIB
	0719	1530	DWIN										
	0936	1530	BLEN										
	0726	1500	WEIS				1000.7	1002.9	1				IIIG
	2017	2400	CULG				2023	2400					IIIN,W
	2158	2400	MANI										
20	0000	0255	CULG										
	0000	0900	MANI										
			LEAR				0301.0	0301.6	1				V
	0705	1159	DWIN										
	0705	0717	CULG										
	0716	1411	WEIS				0719.8	0720.0	1				IIIB,U
			WEIS				0757.7	0757 9	1				IIIG
	1418	1500	WEIS				0828	1436	1				IN
	0720	1550	BLEN				1114.7	1114.7	1				IIIB
	1313	1400	DWIN										
			WEIS				1319.5	1320.7	2				IIIG
	2018	2400	CULG	2018	2400		2018	2300					IS,W
			CULG				2019.5	2020	1				IIIG
	2200	2400	MANI										
			CULG				2354	2354.5	2				IIIG
21	0000	0900	MANI										
	0000	0717	CULG	0000	0717								IS,W
			CULG				0203.5		1				IIIB
			CULG	0256	0257	1	0256	0257	2				IIIG
			CULG				0258.5	0259					IIIG,W
			LEAR				0326.1	0327.0	1				CONT
			CULG				0637 5						IIIB,W
			CULG				0650.5	0713	2			II	
			LEAR				0655.0	0724.8	1				S
			LEAR				0655.0	0724.8	1				S
	0710	1530	DWIN										
	0717	1459	WEIS				0746.2	0747.5	2				IIIG
			WEIS				0822 6	0823.2	1				IIIG
			WEIS				1012.6	1012 9	2				IIIG
			WEIS				1134.1	1135.3	2				IIIG
	0735	1535	BLEN				1134.2	1135.2	2				IIIG
			WEIS				1159.3	1159 4	2				IIIB
			WEIS				1230.5	1232.2	1				IIIG
			BLEN				1331 5	1331 7	1				IIIB
			WEIS				1331.5	1333.2	3				IIIG
	2018	2400	CULG	2040	2400								IS W
			CULG				2120	2234					IIIN W
	2200	2400	MANI										
			CULG	2226.5	2227	2	2227	2227.5	1				IIIG
22	0000	0718	CULG	0000	0601								IN,W
			CULG				0047 5	0048.5	3	0047.5	0048.5	3	IIIG,V,U
			PALE				0047.8	0048.4	2				III
	0000	0900	MANI							0046.7-	0049.1	1	III
			MANI							0048.7	0049.1	1	III
			CULG	0521	0523		0521	0523					IIIG,W

SOLAR RADIO EMISSION
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NOVEMBER 1979

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
22			CULG	0601	0718								IS,W
			CULG				0612 5	0613					IIIG,W
			LEAR				0633.4	0633.6	1				V
			CULG				0633	0633.5					IIIG W
			LEAR				0700.4	0702.7	1				CONT
	0710	1515	DWIN										
	0735	1104	BLEN										
	0719	1457	WEIS				0939.8	0942.4	2				IIIG
			LEAR				0940.1	0941 0	1				CONT
			WEIS				0947.9	0948.5	1				IIIG
			WEIS				1117.1	1117.4	2				IIIG
			WEIS				1150.3	1152.3	3				IIIG
	1245	1525	BLEN										
			WEIS				1327.7	1328.0	3				IIIB
			WEIS				1338.4	1339.6	2				IIIG
			WEIS				1419.0	1419.4	2				IIIG
			PALE				1922 4	1922.8	2				III
	2019	2400	CULG	2044	2326								IS,W
	2200	2400	MANI										
			CULG				2254.5						IIIB,W
			CULG	2326	2400								IN,W
23	0000	0900	MANI										
	0000	0718	CULG	0000	0045								IN,W
			CULG	0045	0146								IS,W
			CULG				0341						IIIB,W
			CULG	0503			0502	0503					IIIG,W
	0715	1330	DWIN	0833.2	0833.5	1							IIIG
	0721	1131	WEIS				0912.5	0912.7	1				IIIB
	0740	1530	BLEN				1021.0	1021.4	2				IIIG
			WEIS				1021.1	1021.3	2				IIIG
			DWIN	1210.0	1212.0	2							IIIG
	1141	1456	WEIS				1317.8	1318.2	2				IIIB
			PALE				2115.2	2118.1	2				V
	2018	2400	CULG				2115 5		1	2115.5		1	IIIB
			CULG				2117.5	2118	2	2117.5	2118	2	IIIB
			CULG	2139	2242								IN,W
	2200	2400	MANI										
			CULG	2247.5		2							IIIB
24	0000	0900	MANI										
	0000	0719	CULG				0005	0005 5	1				UNCLF
			CULG				0147						IIIB,W
			CULG	0326 5			0326.5						IIIB,W
			CULG	0332	0333								I,W
			LEAR				0412.9	0415.9	2				V
			CULG	0413.5	0414	1	0413	0415.5	2				IIIGG
			CULG				0444		2				IIIB
			LEAR				0553.9	0554 7	1				V
			CULG				0554						IIIB,W
			CULG				0700.5	0701 5	1				IIIG
			LEAR				0700.8	0701.7	1				CONT
	0715	1520	DWIN										
			LEAR				0716.5	0718.2	2				V
			CULG				0716.5	0718	2				IIIG
	0722	1436	WEIS				0946.5	0947.7	3				IIIG
	0740	1530	BLEN				0946.5	0948 6	1				IIIG
			LEAR				0946.6	0947.1	2				V
			WEIS				1019.7	1019 8	1				IIIB
			BLEN				1033.7	1033.9	1				IIIG
			WEIS				1033.7	1034 4	2				IIIG
	2200	2400	MANI										
	2019	2400	CULG	2202.5	2203	2	2202.5	2203	2				IIIG
			CULG	2207	2400								IS,W
			CULG	2256.5	2257	1	2251.5	2257	2	2253.5	2257	2	IIIGG
			PALE				2354.0	2356.9	2				V
25	0000	0719	CULG	0000	0101		0000	0154					IN,W
	0000	0900	MANI										
			CULG				0602	0533					IIIN,W

SOLAR RADIO EMISSION
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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
25			CULG				0154	0420					IS,W
			LEAR				0200.0	0223.8	1				S
			LEAR				0200.0	0000 0	1				S
			CULG				0420	0719					IN,W
			LEAR				0532 0	0542.7	1				S
			LEAR				0532.0	0000.0	1				S
			CULG				0532		1				IIIB
			CULG				0537.5	0538	1				IIIG
			CULG	0541	0553								IN,W
			CULG				0541	0542.5	1				IIIG
	0717	0908	WEIS				0814	0856	1				IN
			WEIS				0902.8	0908.0	3				IIIGG
	0740	1530	BLEN				1003.0	1008 7	2				IIIGG,RS
			LEAR				1005.1	1008.7	1				CONT
	1104	1207	WEIS										
	1257	1454	WEIS										
	2158	2400	MANI										
	2019	2400	CULG				2357	2357.5					IIIG,W
26	0000	0900	MANI										
	0000	0719	CULG				0345.5		1				IIIB
			CULG	0441	0442	1							IIIG
	0740	1425	BLEN										
	1024	1510	DWIN	1042.9	1043.0	1							IIIG
	0726	1221	WEIS				1207.2	1207.7	1				IIIG
	1227	1454	WEIS										
	2020	2400	CULG										
	2200	2400	MANI										
27	0000	0900	MANI							0108.0-	0108.4	1	III
	0000	0718	CULG	0713	0716								IS,W
			LEAR				0714.4	0720.4	1				CONT
	0720	1520	DWIN										
			LEAR				0733.3	0741.6	1				CONT
	0745	1530	BLEN										
	0727	1453	WEIS				0838.6	0838.8	1				IIIB
			WEIS				1255.4	1256.0	1				IIIG
	2021	2400	CULG										
	2200	2400	MANI										
28	0000	0900	MANI										
	0000	0720	CULG				0115.5	0116.5					IIIG,W
	0836	1515	DWIN										
	0745	1530	BLEN				1333.2	1333.2	1				IIIB
	0729	1452	WEIS				1333.3	1334.5	2				IIIG
	2020	2400	CULG										
	2200	2400	MANI										
29	0000	0900	MANI										
	0000	0720	CULG				0034		1				IIIB
	0725	1515	DWIN										
	0730	0916	WEIS										
	0745	0910	BLEN										
	1019	1450	WEIS										
	1315	1530	BLEN										
	2020	2400	CULG	2051.5	2052	1							UNCLF
	2200	2400	MANI										
30	0000	0720	CULG										
	0000	0900	MANI										
	0736	1345	DWIN										
	0732	1450	WEIS				1202.3	1203.7	2				IIIGG
	0745	1530	BLEN				1202 6	1203.6	1				IIIG
	2020	2400	CULG	2036.5	2037.5	1	2037		1				IIIG
			CULG				2144	2144.5		2144			IIIG,W
	2200	2400	MANI										
			CULG				2342	2344		2342	2343.5		IIIG,W
			CULG				2359	2359.5					IIIG,W

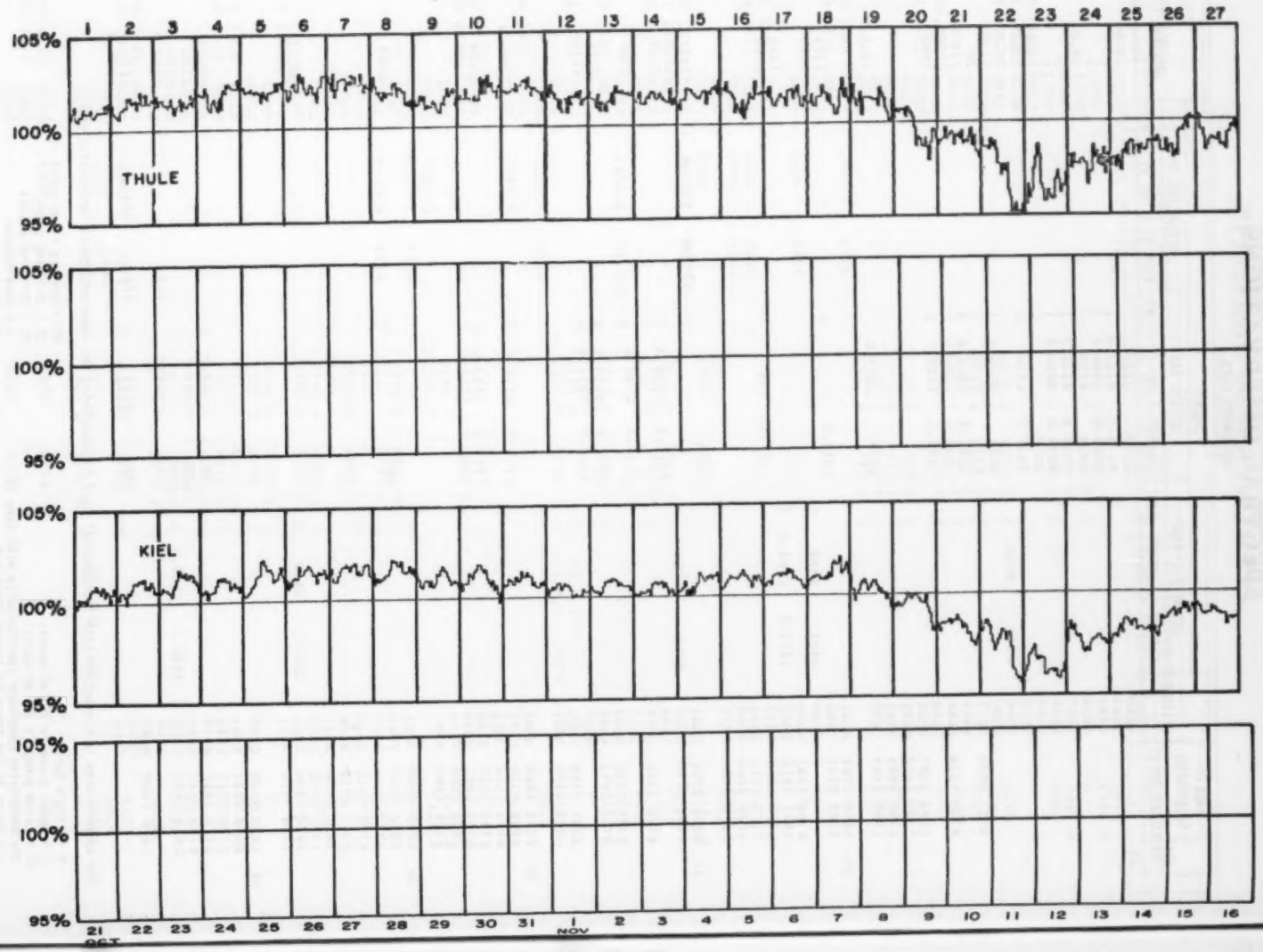
The symbols used in connection with the spectral type in describing the important bursts are as follows:

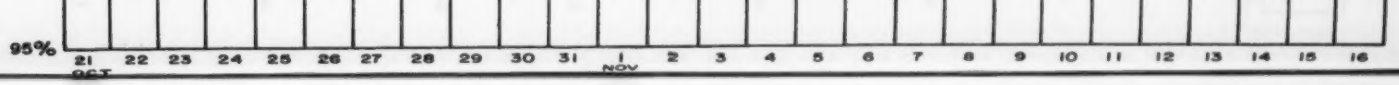
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES
(Neutron Monitors)

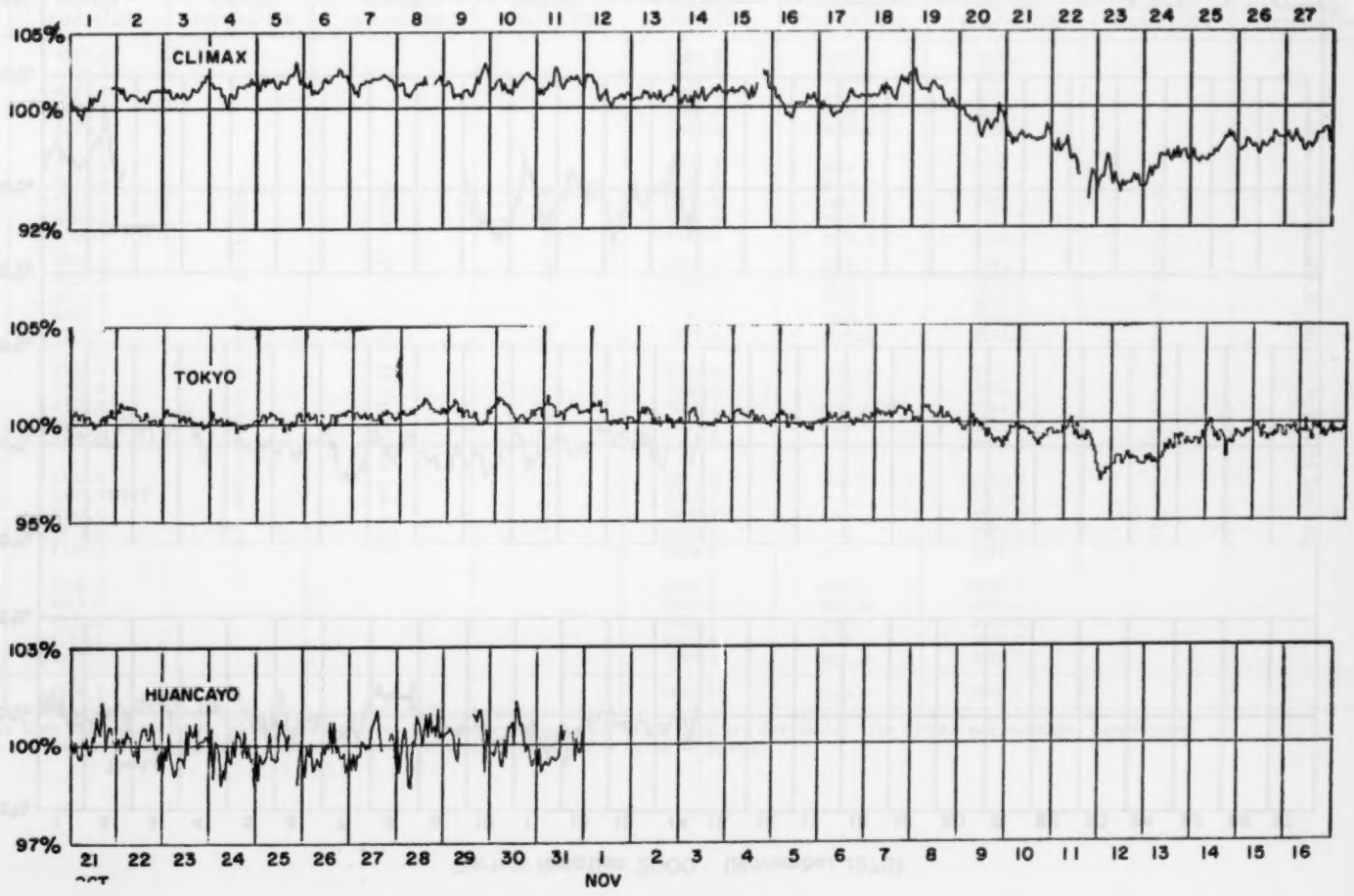
Bartels Rotation 1999 (October - November 1979)





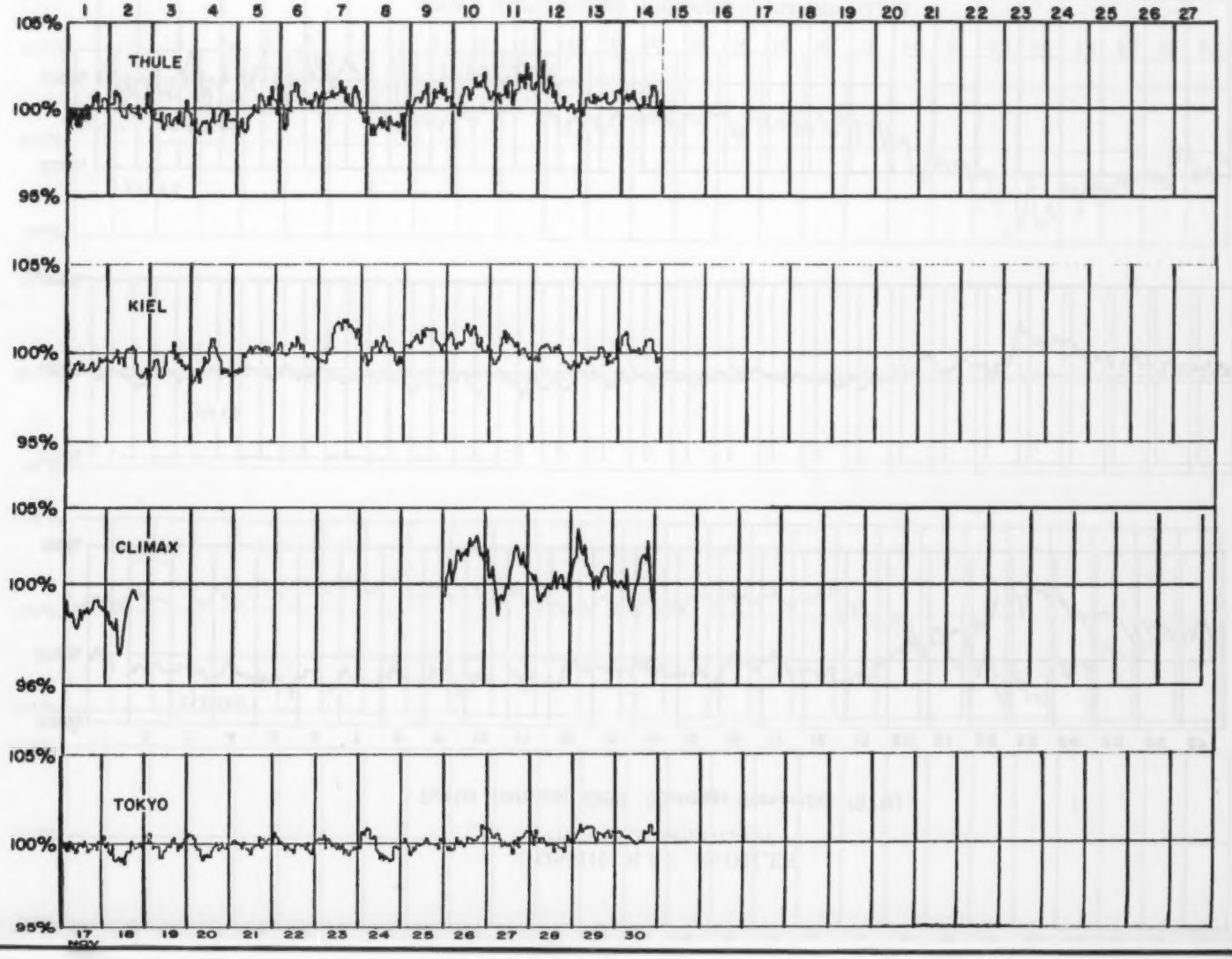
COSMIC RAY INDICES
(Neutron Monitors)

Bartel Rotation 1999 (October - November 1979)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2000 (November 1979)



COSMIC RAY INDICES

(Neutron Monitors)

Nov. 1979	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h)/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	KULA Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	4227.6				5880.8	3897.5	3599.0		
2	4227.4				5893.4	3888.7	3594.6		
3	4224.1				5880.4	3888.6	3593.0		
4	4232.8				5900.4	3906.6	3597.1		
5	4223.4				5909.6	3869.4	3588.3		
6	4224.8				5912.7	3867.8	3595.6		
7	4219.8				5929.4	3903.5	3603.8		
8	4212.2				5874.8	3897.2	3597.3		
9	4151.9				5822.6	3824.6	3571.2		
10	4124.1				5746.5	3782.6	3568.4		
11	4047.0				5690.6	3724.2	3543.5		
12	4020.4				5619.8	3674.8	3518.6		
13	4071.4				5704.9	3718.9	3548.5		
14	4092.3				5737.3	3748.9	3564.7		
15	4125.0				5778.4	3765.8	3571.0		
16	4129.3				5786.0	3778.7	3573.6		
17	4161.8				5792.3	3804.7	3574.7		
18	4165.8				5810.1	3796.2(38)	3564.9		
19	4141.4				5804.1	----	3576.0		
20	4136.0				5798.5	----	3572.1		
21	4160.8				5829.0	----	3578.3		
22	4181.9				5848.7	----	3575.9		
23	4187.6				5888.2	----	3574.8		
24	4131.9				5838.8	----	3572.5		
25	4190.0				5884.0	----	3577.1		
26	4199.9				5881.8	3887.1	3584.5		
27	4213.5				5849.8	3862.6	3587.0		
28	4190.4				5831.6	3846.7	3580.8		
29	4185.1				5822.4	3872.1	3600.0		
30	4182.1				5854.9	3851.3	3593.3		
MEAN	4166.1				5826.7	3829.0	3578.0		

Data not available at time of publication.

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

NOVEMBER 1979

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S*	M			
1	D5*	3	3	2+	3	3	3+	4-	3	24+	2	2+	2	3-	3-	3+	3+	3-	16	30	22	23	29		0.9
2		3+	4-	3-	3-	3	2+	2-	1	20+	3-	3-	2	3-	3	3-	2	1+	12	19	21	24	17		0.7
3		1-	0+	1	3-	2+	3+	3+	3+	17	1-	0+	1-	2	2	3	3+	3	10	22	20	9	33		0.6
4		3+	3	2+	3-	2	2-	2	1	18	3-	2+	2	2+	2	1+	3-	1+	10	17	17	23	12		0.5
5	Q2	0+	0	0+	1-	1	1-	1	0+	4+	1-	0+	1-	1	1-	1-	1	1-	2	3	6	4	5	CC	0 0
6	Q4	1-	1	1-	1+	1	0+	0+	0+	6-	1	1+	1	1+	1-	0	0	0+	3	4	10	12	2	CC	0 1
7		1	2	2-	2+	2+	4-	4	2+	19+	1+	2-	2-	3-	3-	4-	4-	3-	12	19	30	16	34			0.7
8	D4*	3-	2	5-	4-	3	2+	2-	2-	22-	2	2-	4-	4	3	2+	2-	2+	14	17	35	33	19		0.8
9	D3*	2+	2+	3-	1+	4	5-	4+	3+	25	2+	3-	2+	1+	4	5-	4-	3+	19	33	44	21	56		1.0
10		1+	2	2-	1+	1+	1+	2-	3-	13+	1-	2-	1+	1	1-	1+	2	3	6	12	13	12	13	C	0.3
11		3	3+	2-	2	2	3	2	2-	19-	3+	3-	2	2	2-	3+	3-	2	10	17	26	25	19		0 6
12		1	1+	2+	2+	2+	2+	2	2-	15+	1+	2-	2+	2	2+	3-	2	2	7	13	19	15	18		0 4
13	D1	4	5-	4-	4+	4	5	5+	4+	35+	3+	3+	3+	4	4-	5-	5-	4	35	57	47	34	70		1.4
14		5	4+	3-	1	1-	1	0+	0	15	4+	3+	2	1+	1-	1+	0	0	13	14	10	20	5	K	0.8
15	Q5	0	1	1-	1+	1+	1-	0+	1	6+	0+	2-	1-	1	1	1	0+	1+	3	4	7	6	6	CK	0.1
16		2+	3+	4-	2	2	3-	3-	2	21-	3	3	3	2	2	3	3-	2+	12	20	32	31	21		0.7
17		3+	2+	3-	2	1	1-	2	1	15	2+	3-	3-	2+	1	1-	3-	2-	8	12	21	24	9		0 4
18	Q9	3-	1-	1	1+	1	1	0+	0+	8+	3	1+	1	1+	1	1	0+	1-	4	7	13	16	4	KK	0.2
19		0+	1-	1+	2	2	2	2	3	13+	0	1	1-	2-	2+	2	2	3	7	15	17	8	24	K	0.3
20		2	1+	2+	3-	3	3+	2-	1+	18-	2+	1+	2+	3	3-	3+	2-	1+	10	14	20	16	19		0.5
21		3-	2	2	1	1	1+	2-	0+	12	2-	1+	2-	1	1	1+	2-	0+	6	10	10	12	8	CK	0 3
22	Q3	0	0	1+	1+	1-	1-	0+	0	4+	0+	1-	1	2-	1-	1-	0	0	2	2	8	7	3	CC	0.0
23	Q6	0+	0	0+	2-	1	1	2-	2	8	0+	0	0+	1	1+	1+	2-	2+	4	8	8	6	11	CK	0.1
24	D2	3	4-	4	4	4-	4-	4	4	30	3-	3-	3	4-	4	4-	4	4-	24	38	39	30	48		1 1
25		4+	5	2+	2	2-	1	1+	2-	19+	4-	4-	2	1+	2-	1+	2	2-	15	21	13	26	9		0.8
26	Q7	1	0	0	0+	1+	1+	2+	2-	8	1+	0	0+	0+	1+	2-	3-	2	4	11	7	4	14	CC	0.1
27	Q8	2	1	2+	1-	1	1-	1-	0+	9-	2-	1+	2	1-	1+	1-	1-	0+	4	4	7	8	3	CC	0 2
28	Q1	0+	0	1	0	0+	0+	1-	0+	3	0	0	1-	0	1-	1-	1	1+	2	2	3	2	3	CC	0.0
29	Q8	0+	0	1-	1-	1-	2+	2+	1	8	0+	0+	1	1	1	3-	3-	2-	4	6	12	5	14	C	0.1
30		1	2-	5	3+	3+	3-	2	2	21	1+	2-	5-	4-	3	3-	2-	2-	15	22	30	34	19		0.8
																		Mean	10	15.8	18.9	17.6			0.48

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	2+	2	2	3-	3-	3	3	3-	2	3-	2	3	3-	3+	4-	3
2	3-	3	2	3-	3	3-	2	1	2+	3-	2+	2+	3	3	2	2-
3	1-	0	1-	2-	2	3	3+	3	1	1-	0+	2+	2	3-	3	3
4	3-	2	2-	3-	2	1+	2	1	3-	2+	2+	2+	2	1+	3-	2-
5	0+	0	1-	1-	1-	1-	1	0+	1	0+	1	1+	1-	1-	1	1+
6	1-	1+	0+	1+	0+	0	0	0	1+	2-	2-	1+	1	0	0	0+
7	1	1+	1+	2+	2+	4-	3+	3-	2-	2+	2	3	3	3+	4-	3-
8	2	1+	4-	4	3	3-	1+	2-	2	2	4-	4+	3	2	2	3-
9	2-	2-	2	1+	4	5-	4-	3	3-	3	3-	1+	4+	5-	4	4-
10	0+	1+	1	1	1-	1+	2-	2+	1	2+	2-	1	1	2-	2+	3+
11	3-	2+	1+	2-	2-	3	2+	1+	4-	3	2+	2+	2	4-	3-	3-
12	1-	1+	2+	2	2+	2+	2	2-	2-	2	2+	2	2+	3-	2+	2+
13	3+	4-	3	4-	4-	4+	5-	4-	3+	3+	3+	4	4	5-	5-	4
14	4	3+	2	1	0+	1	0+	0	5-	4-	2+	1+	1	1+	0	0
15	0	1	0+	1	1-	1	0+	1	1-	2	1	1	1	1	1-	1+
16	3-	3	3-	2-	2-	3+	3-	2	4-	3+	3+	2+	2	3	3	2+
17	3-	2	2+	2	1-	1-	2+	1+	2-	3	3	3-	1+	1	3	2
18	2+	1-	1-	1+	1	1-	0+	0+	3+	2-	1+	1+	1	1+	1-	1
19	0	1-	1	2-	2+	2	2-	3-	0	1+	1-	2-	2+	2-	2	3+
20	2-	1	2+	3-	3	3+	2-	1+	3-	2-	2+	3	3-	3	2	1+
21	2	1+	2	1	1	1+	2-	0+	2-	1+	1+	1	1+	1+	2-	1-
22	0	0+	1-	2-	1-	0+	0	0	1	1	1+	2-	1	1-	0	0+
23	0	0	0	1	1+	1+	2-	2	1-	0+	0+	1	1+	1+	2	2+
24	3-	3-	3	4	4	4-	4	3+	2+	3	3	3+	4	4-	4-	4-
25	4-	3+	2-	1+	1+	1+	2-	1+	4-	4-	2+	1+	2+	1+	2+	2-
26	1	0	0+	0+	1	1+	3-	2-	2-	0	0+	0	1+	2	3	2+
27	2-	1+	2+	1-	1+	1-	0+	0+	2	1+	2	1-	1+	1	1	1-
28	0	0	1	0	0+	1-	1	1-	0	0	0+	0+	1-	1-	1	2-
29	0	0	1-	1-	1	3-	2+	1	1-	0+	1+	1+	1+	3-	3-	2+
30	1-	1+	5-	3	3	3-	1+	2-	2-	2	5-	4	3+	2+	2-	2

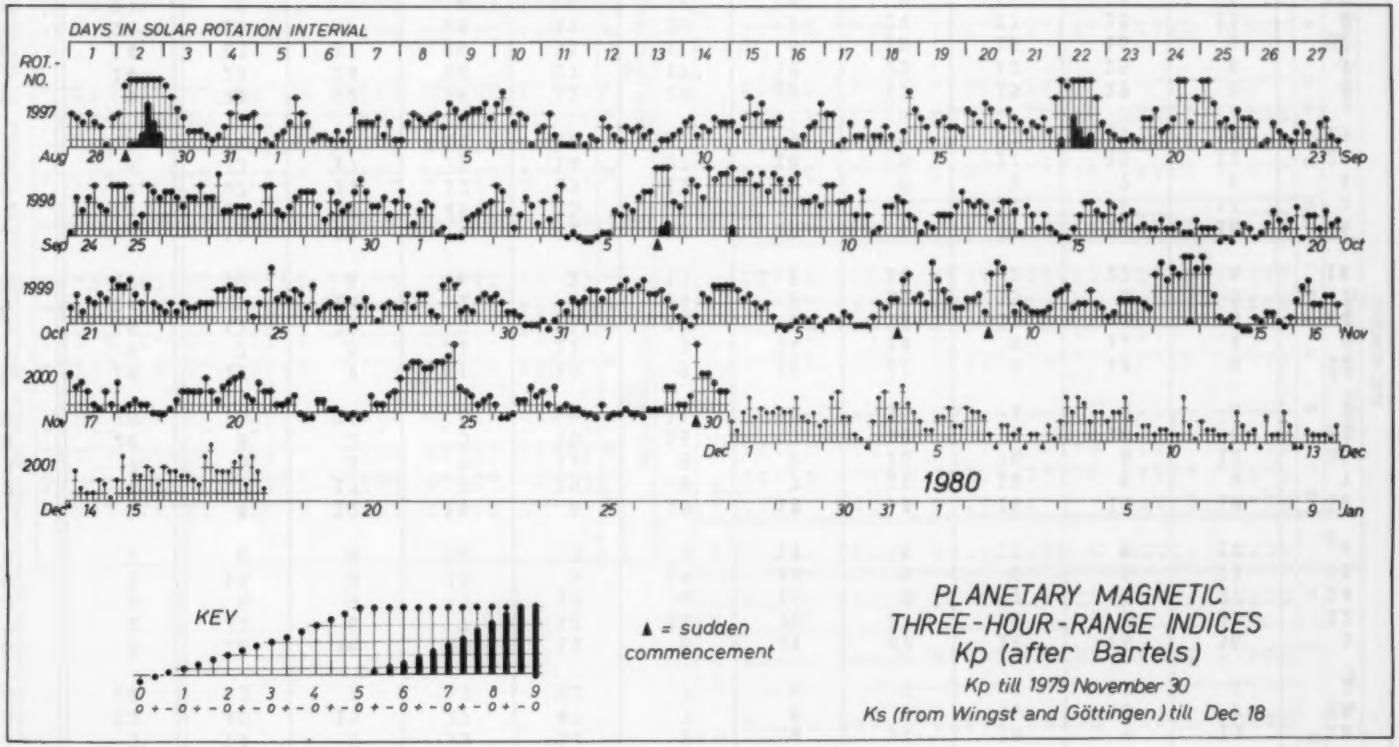
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) are prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤ 6 but one Kp≥ 3o or two Kp values ≥ 3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Kn, Ks and Km as in *IAGA-Bulletin No. 33* and indices aa ("antipodal") as in *IAGA-Bulletin No. 33* are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 1200 UT.

DAILY AVERAGE INDICES Ap

	1978	1979										
DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	11	10	6	12	33	18	5	7	16	10	10	16
2	3	19	10	20	36	14	6	4	11	5	7	12
3	5	19	9	13	54	6	4	14	10	9	13	10
4	12	45	19	27	47	7	6	9	16	10	9	10
5	10	23	9	13	52	7	4	9	8	17	6	2
6	5	18	16	30	12	6	34	22	18	15	36	3
7	2	32	6	7	12	11	26	27	10	6	32	12
8	3	8	9	7	12	8	14	9	7	6	37	14
9	3	15	9	15	9	14	15	6	6	5	23	19
10	1	4	6	54	12	7	14	6	7	9	17	6
11	1	4	12	18	6	19	10	4	10	14	10	10
12	4	10	17	6	15	9	7	11	18	8	8	7
13	7	5	3	7	11	8	8	16	76	8	12	35
14	28	8	2	3	15	11	7	14	7	10	6	13
15	28	15	11	8	18	11	10	15	4	8	8	3
16	14	12	7	11	16	5	16	11	5	14	8	12
17	9	7	5	21	11	3	14	14	8	11	4	8
18	48	11	22	7	6	11	6	15	11	64	3	4
19	24	19	15	11	6	24	6	11	35	6	5	7
20	26	12	6	6	2	13	8	18	42	22	6	10
21	12	11	59	4	21	13	15	9	22	23	10	6
22	19	14	33	45	45	36	24	[illegible]	12	6	14	2
23	7	27	31	12	23	11	19	6	5	7	6	4
24	6	23	17	15	14	27	10	5	13	15	12	24
25	21	34	14	21	126	34	9	3	22	19	14	15
26	8	28	22	26	12	25	20	17	15	19	8	4
27	14	23	24	18	27	17	10	23	12	15	6	4
28	14	13	17	39	31	11	4	10	10	16	9	2
29	20	13		68	47	30	7	24	77	15	11	4
30	27	16		16	26	10	10	9	15	18	5	15
31	18	13		19		6		3	12		5	
MEAN	13	16	15	19	25	14	12	12	18	14	12	10

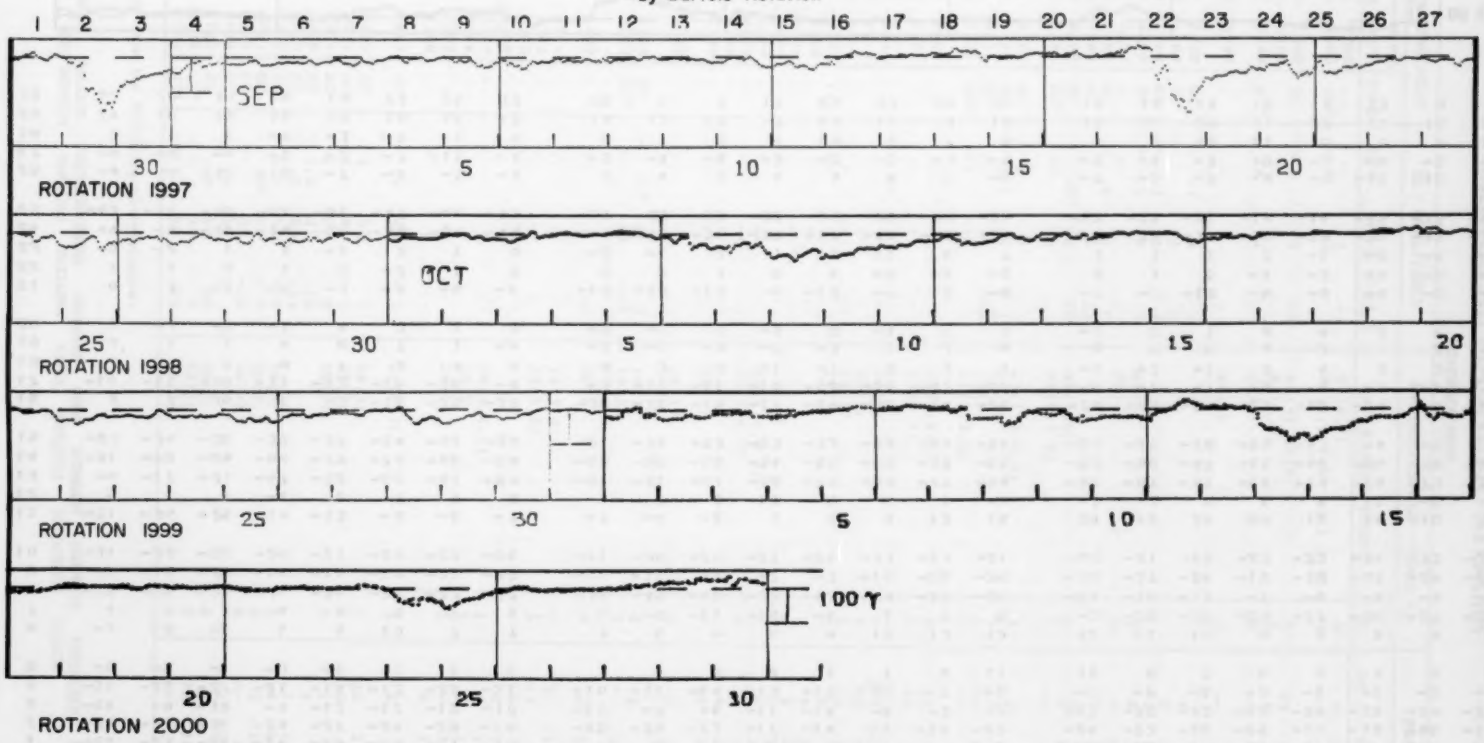
GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

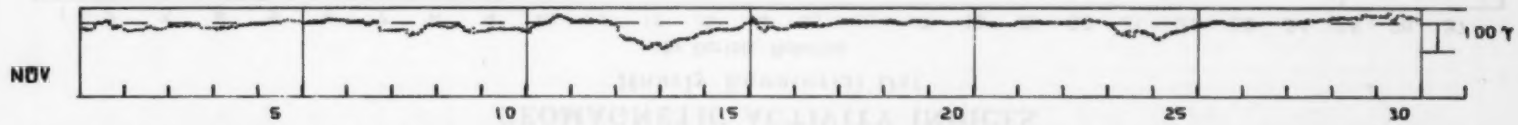
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

NOVEMBER 1979

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-20	-23	-24	-27	-28	-25	-21	-16	-7	0	2	-2	-1	7	7	2	-8	-13	-23	-18	-13	-14	-17	-24
2	-24	-31	-32	-28	-27	-24	-28	-26	-25	-29	-23	-17	-14	-11	-18	-22	-24	-23	-26	-25	-21	-19	-16	-13
3	-10	-8	-10	-9	-12	-13	-12	-10	-10	-7	-6	-11	-14	-8	-3	-2	-11	-20	-22	-20	-20	-21	-19	-21
4	-18	-22	-27	-21	-14	-13	-20	-21	-16	-11	-14	-19	-17	-13	-7	-6	-7	-8	-6	-5	-2	-2	-2	-4
5	-5	-5	-4	-3	-9	0	0	0	3	5	3	2	1	7	9	11	10	8	7	5	6	5	3	0
6	-2	-3	-2	1	6	10	7	7	7	5	6	6	8	12	13	12	12	11	10	9	9	8	8	5
7	1	1	3	5	1	5	7	9	0	-5	-11	-10	-4	1	7	5	-2	-20	-29	-29	-27	-26	-25	-25
8	-25	-25	-26	-26	-26	-23	-23	-27	-38	-45	-45	-33	-43	-39	-35	-30	-24	-18	-12	-7	-6	-9	-9	-7
9	-7	-15	-15	-14	-16	-19	-21	-20	-15	-11	-7	-7	-3	-15	-20	-29	-32	-37	-26	-19	-39	-33	-29	-28
10	-31	-33	-32	-25	-21	-20	-23	-26	-21	-20	-20	-23	-25	-23	-23	-21	-22	-21	-20	-23	-20	-24	-33	-30
11	-31	-30	-25	-14	-13	-8	-6	-7	-7	-4	-2	1	1	8	13	15	20	25	26	20	14	14	10	7
12	6	1	1	-1	2	7	9	0	1	0	0	13	5	6	1	-1	-3	-3	0	4	4	1	-9	-9
13	-6	-17	-31	-47	-52	-60	-61	-59	-61	-61	-61	-66	-70	-68	-77	-84	-90	-87	-81	-80	-73	-70	-73	-74
14	-91	-90	-85	-82	-79	-76	-66	-64	-60	-59	-55	-54	-56	-55	-58	-56	-53	-50	-49	-45	-40	-35	-34	-33
15	-33	-34	-35	-30	-27	-24	-22	-22	-21	-22	-23	-23	-23	-23	-26	-24	-21	-21	-18	-14	-13	-4	-3	0
16	3	9	18	5	-9	-19	-25	-32	-30	-22	-15	-17	-19	-20	-24	-26	-24	-25	-24	-23	-20	-14	-9	-12
17	-15	-11	-10	-11	-13	-16	-16	-8	-8	-14	-11	-10	-13	-11	-11	-12	-6	-7	-7	-6	-4	-1	-1	1
18	2	1	0	8	7	8	7	6	6	3	0	-1	-1	2	2	1	-1	-2	-1	0	4	3	3	4
19	3	1	1	4	8	7	1	-4	-8	-9	-5	-5	-3	1	3	6	6	7	5	1	3	1	3	-1
20	1	-3	-5	-1	4	3	1	1	-5	-7	0	-3	0	-1	1	0	-1	0	1	2	4	3	4	6
21	6	3	-2	-4	-3	-4	-6	-6	-10	-13	-10	-8	-10	-7	-6	-6	-7	-8	-10	-9	-9	-8	-6	-2
22	1	1	0	1	0	-2	1	2	0	0	3	5	4	-5	-1	-2	0	1	0	-1	-3	-4	-6	-6
23	-5	-2	1	1	-1	0	1	0	-2	-1	2	1	10	11	8	7	3	1	1	2	-1	-2	-4	-7
24	-9	-9	-14	-19	-26	-33	-39	-44	-44	-45	-31	-29	-50	-46	-32	-30	-27	-28	-37	-32	-29	-38	-42	-38
25	-43	-51	-59	-61	-51	-47	-46	-41	-39	-35	-33	-32	-31	-29	-28	-28	-27	-25	-21	-18	-14	-15	-15	-11
26	-9	-9	-10	-10	-7	-6	-5	-1	2	4	5	4	4	4	4	-2	-7	-6	-5	-9	-9	-10	-10	-7
27	-9	-9	-4	-1	-2	-7	-11	-7	-5	-4	-4	-3	-2	0	-3	-4	-5	-4	-3	-3	-3	-4	-5	-2
28	0	1	1	-1	-3	-3	-1	4	6	7	8	9	10	10	7	5	4	8	10	11	10	6	8	12
29	14	16	15	12	15	18	18	17	14	13	15	17	19	19	13	10	15	26	28	21	22	23	18	20
30	23	20	19	18	18	20	19	33	32	6	8	17	26	20	26	26	16	14	14	15	13	10	8	9



Note: The Hermanus Observatory has informed us that the hourly values from Hermanus for six hourly intervals beginning 0700 UT and ending 1300 UT on April 2, 1979 were in error. These errors have been corrected, and accordingly the Provisional Dst values for these hourly intervals have been corrected. As indicated in the footnote under the June 1979 Provisional Dst table, we updated the observatory baselines and recalculated Provisional Dst from January 1979. The updated Provisional Dst values that incorporate the Hermanus corrections are available upon request.

PRINCIPAL MAGNETIC STORMS

NOVEMBER 1979

OBS. 3 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	UT END HOUR
HYB	07.6N	1	0000	..	..	..	..	01(4,7)	4	4	124	23	02	19
KGL	56.5S	1	1003	SC*	- 6	12	- 3	01(4,6 7,8) 02(1,5 6)	3	--	--	--	02	19
NEW	55 1N	7	1349	SC	4	9	--	08(4) 09(6)	5	29	110	77	10	01
HYB	07.6N	7	0000	..	.	..	..	07(6,7)	5	6	190	38	08	19
KGL	56.5S	7	1349	SC*	14	21	7	07(7)	5	--	--	--	07	22
GUA	04.0N	8	0700	.	.	..	.	08(3)	5	--	150	30	09	21
JAI	17 3N	9	1200	SC	- .3	9	- 2			4	92	18	10	03
SHL	14.6N	9	1200	SC		11	2			4	107	13	10	03
UJJ	13.5N	9	1200	SC	- .3	11	- 3			3	101	19	10	03
ABG	09.5N	9	1200	SC	- .5	9	- 3	09(5)	5	4	102	21	10	03
HYB	07.6N	9	0100	..	..	.	..	09(6)	6	4	163	31	09	23
ANN	01.5N	9	1200	SC	- .6	11	7			3	127	31	10	03
TRD	01.1S	9	1200	SC		9	13			3	120	75	10	03
PMG	18.6S	9	0304	SC	.8	11	10	09(5,6)	5	9	100	70	10	00
KGL	56.5S	9	1204	SC*	19	26		09(6,7 8)	5	--	--	--	10	00
HON	21 1N	11	0224	SC	2	7	3	11(1 2,6,8)	3	1	25	13	12	00
HYB	07.6N	11	0225	SC	- 1.1	33	- 2	11(1)	4	2	78	24	11	23
GUA	04.0N	11	0225	SC	--	35	-10	11(1)	5	--	120	50	11	21
KGL	56.5S	11	0225	SC*	-11	-14	3	11(1,2,6)	3	--	--	--	12	00
NEW	55.1N	12	0608	..	..	..	..	13(4,5,6)	5	33	137	194	14	10
IRK	41.0N	12	2100	.	..	.	..	13(6,7)	5	19	94	42	14	07
COL	64.6N	13	02--	..	.	..	.	13(6)	6	251	1280	710	14	10
SIT	60 0N	13	02--	..	.	..	.	13(4)	7	80	570	490	14	00
FRD	49.6N	13	01--	..	.	..	..	14(1)	5	18	133	41	14	12
SJG	29.9N	13	0335	..	..	.	.	13(1)	5	8	65	36	14	07
JAI	17.3N	13	0200	..	..	..	..			6	126	29	14	12
SHL	14 6N	13	0200	.	.	..	.			6	161	44	14	12
UJJ	13.5N	13	0200	.	..	.	..			5	133	24	14	12
ABG	09.5N	13	0200	.	..	..	.	13(3,4,6 7)	5	5	147	34	14	12
HYB	07.6N	13	0100	..	.	..	..	13(5 6,7)	5	4	168	26	14	07
TRD	01.1S	13	0200	.	..	..	..			4	226	90	14	12
HER	33.7S	13	0100	..	..	..	..	13(7)	5	25	126	83	14	08
HYB	07.6N	15	2300	..	..	..	..	16(1)	5	2	133	31	17	11
HYB	07 6N	18	0209	SC	- .5*	21	- 3	18(1)	4	2	93	20	18	16
GUA	04 0N	18	0209	SC*	--	38	-11	18(1)	5	--	100	20	18	07
HYB	07.6N	19	1200	.	..	.	..	20(6)	4	2	115	16	20	21
COL	64.6N	24	03--	..	..	.	.	24(3 4)	7	191	1450	540	25	15
IRK	41.0N	24	0300	..	.	..	..	24(5,6)	5	17	96	38	25	08
JAI	17.3N	24	0300	.	.	.	..			5	98	27	25	13
UJJ	13.5N	24	0300	.	..	..	.			4	105	25	25	13
ABG	09.5N	24	0300	..	.	..	.	24(3,4,5)	4	5	104	18	25	13
HYB	07 6N	24	0000	..	..	.	..	24(5)	5	4	119	20	25	10
GUA	04.0N	24	0800	.	.	..	.	24(5)	5	--	110	20	25	06
TRD	01 1S	24	0300	..	.	.	..			4	115	85	25	13
HYB	07.6N	29	1647	SC	- .2	15	- 1	29(6,7)	3	2	74	8	30	05
NEW	55.1N	30	0739	SC	3	57	3	30(3)	5	15	110	52	30	20
FRD	49 6N	30	0739	SC*	- 4	43	- 6	30(3)	5	16	98	32	01	
HON	21 1N	30	0739	SC	1	12	4	30(3)	5	1	65	19	01	01
JAI	17 3N	30	0738	SC	- 1.2	47	-10			3	76	29	30	21
UJJ	13.5N	30	0738	SC	- .6	66	-14			3	118	31	30	21
ABG	09.5N	30	0738	SC	- 1.1	54	-15	30(3)	6	4	129	24	30	21
HYB	07.6N	30	0741	SC	- .5*	59	- 7	30(3)	6	3	165	23	02	21
GUA	04.0N	30	0739	SC	--	39	-12	30(3)	6	--	80	30	30	20
TRD	01.1S	30	0738	SC	.4	117				2	214	--	30	21
PMG	18.6S	30	0738	SC	.9	52	50	30(3)	6	9	90	70	30	22
HER	33.7S	30	0739	SC*	- 5	34	9	30(3)	5	28	108	95	01	03
KGL	56.5S	30	0738	SC*	-61	99	24	30(3)	5	--	--	--	30	20

Reports were received from the following observatories:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HYDERABAD IRKUTSK JAIPUR KERGUELEN NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA TOOLANGI TRIVANDRUM UJJAIN

As indicated in the footnote under the June 1979 Provisional Dst table, we updated the observatory baselines and recalculated Provisional Dst from January 1979. The updated Provisional Dst values that incorporate the Hermanus corrections are available upon request.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

NOVEMBER 1979

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin no. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

07 1347: A: VIC; B: WNG FUR QUE MPO CZT KGL DUM; C: WIT HAD EBR (si: C: NGK TOL - sfe: ALM)

09 1203: A: QUE HUA; B: WNG FUR COI TOL ALM MPO CZT KGL; C: WIT HAZ (si: C: NGK)

11 0225: A: QUE HUA MPO DUM; B: MMB KAK KNY KGL; C: CZT

29 1647: A: HUA MPO; B: ESK VIC QUE; C: EBR (sfe: ALM)

30 0738: A: DOB NUR ESK WNG VIC FUR COI TOL FRD ALM QUE HUA CZT KGL; B: WIT HAD MMB EBR QUE DUM; C: HAZ KNY (si: B: NGK - pg: A: DOU)

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

04 2350 - 2402 HAZ KNY

05 0201 - 0225 KNY

05 2034 - 2040 HUA

05 2347 - 2400 MMB KAK HAZ KNY

06 0415 - 0425 HAZ

06 0506 - 0628 KAK HAZ KNY

06 1449 - 1458 HUA

07 0102 - 0138 HAZ KNY

07 0518 - 0535 KAK HAZ KNY

07 0609 - 0634 KAK HAZ KNY

07 1406 - 1416 HUA

08 0428 - 0433 KAK HAZ KNY

09 0304 - 0320 KAK HAZ KNY

09 0604 - 0614 HAZ

10 0642 - 0656 KAK HAZ KNY

14 2022 - 2040 HUA?

15 2025 - 2040 HUA

16 0517 - 0526 QUE

20 0958 - 1034 NGK (ssc: C: HUA - bp: B: MPO)

Very unusual events

n o n e

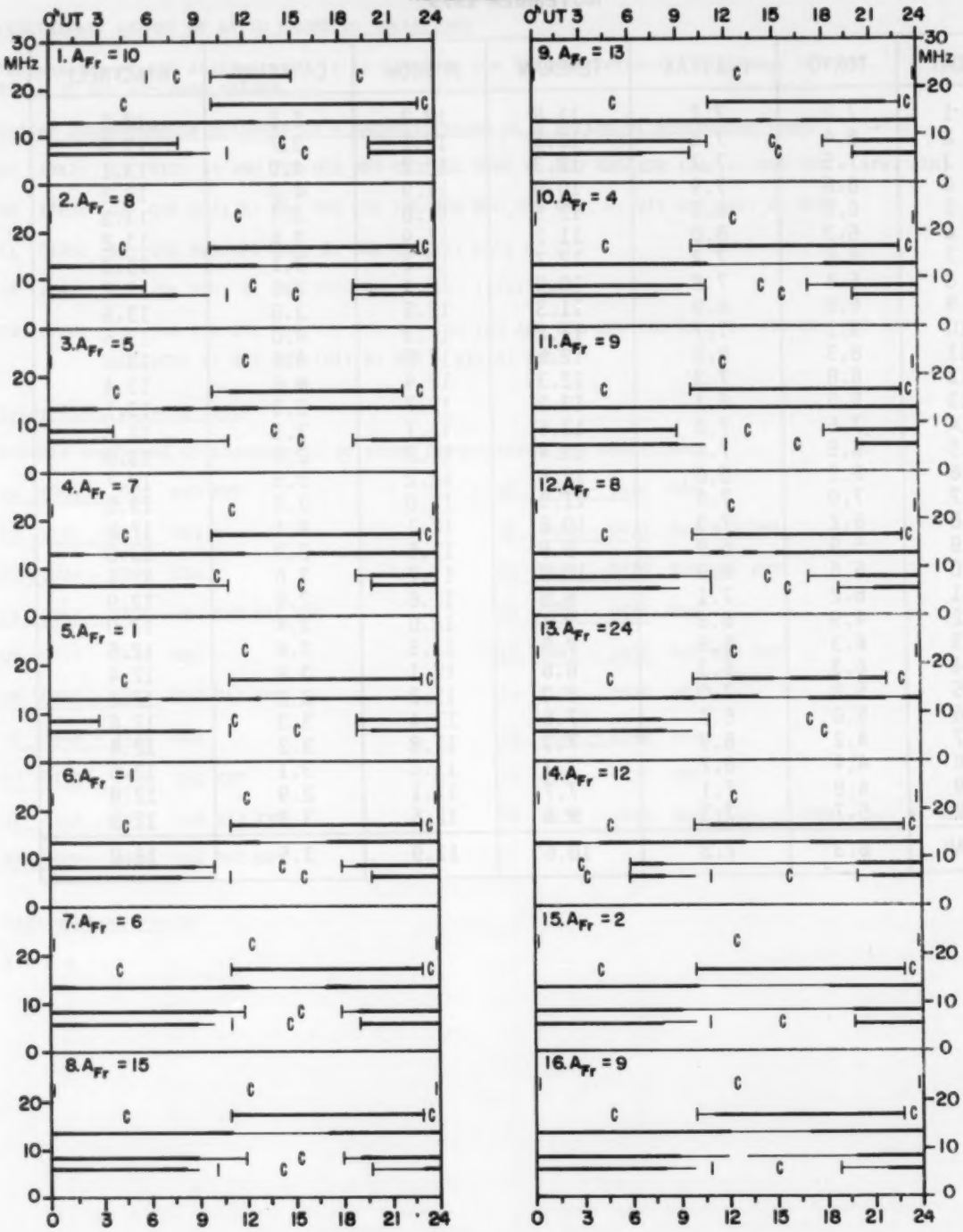
RADIO PROPAGATION QUALITY INDICES

NOVEMBER 1979

DAY	TOKYO	HALIFAX	TEHERAN	MOSCOW	CANBERRA	BRACKNELL
1	7.2	7.7	11.8	12.0	3.5	12.5
2	6.4	7.8	12.5	12.1	3.7	13.2
3	7.5	7.7	12.3	12.2	4.0	13.1
4	6.6	7.9	10.9	11.9	4.0	13.2
5	6.8	8.3	12.5	11.8	3.4	13.3
6	6.3	8.0	11.2	11.9	3.4	13.2
7	6.8	7.7	12.7	12.2	3.1	13.3
8	5.4	7.8	10.9	12.1	2.6	13.2
9	6.9	6.9	11.3	12.5	3.8	13.5
10	9.1	7.7	12.2	12.3	4.0	13.5
11	8.3	8.5	12.5	12.5	4.9	13.5
12	6.8	7.3	12.3	12.4	4.6	13.4
13	5.5	6.1	13.0	12.7	3.3	13.1
14	7.5	7.6	12.5	11.7	3.3	12.8
15	6.5	7.4	11.4	11.8	2.9	13.0
16	6.2	6.6	12.5	12.2	3.5	12.7
17	7.0	7.4	11.9	12.0	3.0	13.0
18	6.2	7.3	10.6	12.1	4.1	12.8
19	5.9	6.9	8.8	11.5	2.9	13.0
20	6.6	6.9	10.0	11.7	3.6	13.1
21	6.2	7.1	9.8	11.6	2.9	12.9
22	4.9	6.8	9.1	12.0	3.4	13.0
23	6.3	6.8	7.9	11.5	3.6	12.5
24	6.3	6.3	8.6	12.1	3.9	12.4
25	5.0	7.0	8.0	11.2	3.8	12.6
26	5.0	6.7	7.5	11.4	3.3	12.8
27	4.2	6.9	7.3	11.8	3.2	12.4
28	4.4	6.7	7.7	11.0	3.1	12.6
29	4.8	7.1	7.7	11.1	2.9	12.8
30	5.7	7.3	9.6	12.6	3.8	12.9
MEAN	6.3	7.3	10.6	11.9	3.5	13.0

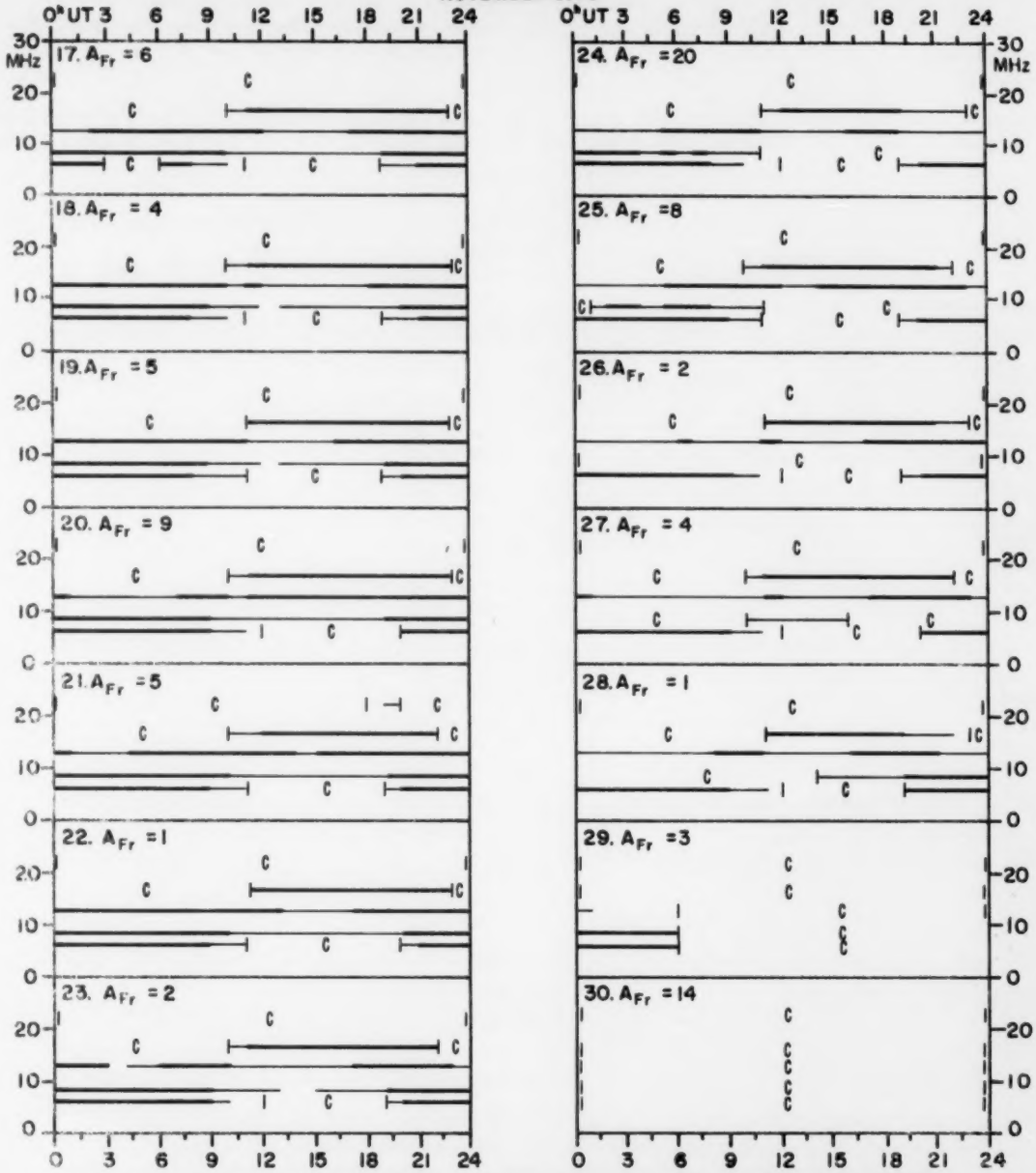
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1979



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1979



Field strengths from five frequencies, 6.425, 8.542, 12.813, 17.084 and 22.378 MHz, observed on a Lüchow - Halifax circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

JANUA
So
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Explanat
noa

Astronomy
QB1.U57
N0425,pt2

JANUARY 1980 NUMBER 425 -- Part II

P.A STACKS

FEB 27 1980

Solar-Geophysical Data comprehensive reports

Data for July 1979 & Miscellanea

Explanation of Data Reports Issued as Number 414 (Supplement) February 1979

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Late Data Pages 27-33

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE / BOULDER, COLORADO

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Solar - Geophysical Data

NO. 425 JANUARY 1980

Part II (Comprehensive Reports)

DATA FOR
JULY 1979

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80303.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80303. Subscription Price: $34.00 annually for both part I (Prompt Reports) and part II (Comprehensive Reports) or $18.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $32.00 for both parts or $16.00 for either part. Single issue price is $1.50 for either part and $1.40 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC.
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SOLAR-GEOPHYSICAL DATA

No. 425

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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Geomagnetic Indices, October 1979
Sudden Commencements and Solar Flare Effects

DETAILED COVERAGE FOR 1979 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1979 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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A.2b	Zurich Final Sunspot Numbers Rz												
A.2c	American Relative Sunspot Numbers RA	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11
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A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	----	----	----	----	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	----	----	----	----	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	
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A.10c	21 cm East-West Solar Scans (Fleurs)	414A 27	415A 28	416A 28	417A 24	418A 25	420B 70	420A 27	421A 29	422A 28	423A 30	424A 28	425A 27
A.10d	43 cm East-West Solar Scans (Fleurs)	414A 28	415A 29	416A 29	417A 25	418A 26	420B 71	420A 28	421A 29	422A 29	423A 31	424A 29	425A 28
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	414A 26	415A 27	416A 27	417A 23	418A 24	419A 26	420A 26	421A 27	422A 27	423A 29	424A 27	425A 26
A.10f	3 cm East-West Solar Scans (Toyokawa)	414A 25	415A 26	416A 26	417A 22	418A 23	419A 25	420A 25	421A 26	422A 26	423A 28	424A 26	425A 25
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A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	414A 36	----	----	----	----	----	----	----	----	----	----	----
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	414A 37	----	----	----	----	----	----	----	----	----	----	----
A.12e	Energetic Solar Particles (IMP H & J)	421B 43	420B 48	421B 30	422B 26	424B 40	----	----	----	424B 39	----	----	----
A.12f	Energetic Solar Particles (GME/SEM)	----	----	----	----	----	----	----	----	----	----	----	----
A.13a	Solar Wind (Pioneers 6 & 7)	414A 36	----	----	----	----	----	----	----	----	----	----	----
A.13ab	Solar Wind (Pioneers 8 & 9)	414A 37	----	----	----	----	----	----	----	----	----	----	----
A.13d	Solar Wind from IPS Measurements	414A 39	415A 45	416A 39	417A 37	418A 35	419A 35	420A 37	422B 89	422A 39	424B 36	424A 37	425B 33
A.13e	Solar Plasma (IMP H & J)	419B 32	419B 47	421B 29	422B 25	423B 17	424B 28	425B 19					
A.13f	Solar Wind (Pioneer 12 (Venus))	414A 38	415A 39	416A 35	417A 31	418A 32	419A 32	420A 36	421A 35	422A 37	423A 37	424A 36	425A 32
A.17	Interplanetary Magnetic Field (Pioneer 8)	----	----	----	----	----	----	----	----	----	----	----	----
A.17	Interplanetary Magnetic Field (Pioneer 9)	414A 37	----	----	----	----	----	----	----	424B 39	----	----	----
A.17	Interplanetary Magnetic Field (Pioneer 12)									423B 73	424B 38	425B 29	
A.17e	Inferred IP Magnetic Field	415A 42	415A 42	417A 34	417A 34	418A 36	419A 36	420A 38	421A 38	422A 40	423A 38	424A 38	425A 34
A.18	Interplanetary Electric Field (Pioneer 8)	----	----	----	----	----	----	----	----	----	----	----	----
A.18	Interplanetary Electric Field (Pioneer 9)	414A 37	----	----	----	----	----	----	----	424B 39	----	----	----
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA												
B.52	Graphs of Transmission Frequency Range	415A162	416A166	417A166	418A166	419A168	420A166	421A166	422A178	423A174	424A154	425A152	
B.53	Quality Figures Based on Frequency Ranges	415A161	416A165	417A165	418A165	419A167	420A168	421A165	422A180	423A173	424A153	425A151	
C.	FLARE-ASSOCIATED EVENTS												
C.1a	Optical Observations Flares	414A 14	414A 15	416A 14	417A 12	418A 14	419A 14	420A 14	421A 14	422A 14	423A 15	424A 15	425A 15
C.1ba	Optical Observations Flares (Standardized Data)	420B 82	422B 38	423B 25									
C.1d	Flare Patrol Observations	414A 23	415A 24	416A 24	417A 20	419A 23	419A 24	420A 23	421A 25	423B 72	423A 26	424A 24	425A 24
C.1d	Flare Patrol Observations	420B120	422B 72	424B 45									
C.1e	Flare Indices (by day)	420B119	422B 72	423B 58									
C.1f	Flare Indices (by Region)	422B 91	423B 83										
C.3	Solar Radio Waves - Outstanding Occurrences	419B 8	420B 8	421B 10	422B 4	423B 4	424B 4	425B 5					
	Solar Radio Waves - Fixed Frequencies - Selected	414A 29	415A 30	416A 30	417A 26	418A 28	419A 27	420A 29	421A 30	422A 30	423A 32	424A 30	425A 29
C.3c	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	415A147											
C.4a	Solar Radio Spectral Obs. (Fort Davis)	417B 60	417B 62	417A138	420B 72	420B 75	420A139	423B 76	423B 78	423A143			
C.4d	Solar Radio Spectral Obs. (Culgoora)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	423A143	424A130	425A125	
C.4e	Solar Radio Spectral Obs. (Weissenau)	415A129	416A134	417A138	418A137	419A142	420A139	422B 86	422A149	423A143	424A130	425A125	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	423A143			
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	415A129	416A134	417A138	418A137	419A142	----	421A145	422A149	423A143	424A130	425A125	
C.4i	Solar Radio Spectral Obs. (Bleien)	415A129	416A134	417A138	418A137	419A142	----	----	422A149	423A143	424A130	425A125	
C.4j	Solar Radio Spectral Obs. (Manila)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	----	424A130	425A125	
C.4k	Solar Radio Spectral Obs. (Learmonth)								422A149	423A143		425A125	
C.4l	Solar Radio Spectral Obs. (Palehua)								422A149	423A143		425A125	
C.5a	Solar X-ray (SMS/GOES) (graphs)	419B 33	420B 53	421B 35	422B 31	423B 17	424B 29	425B 20					
C.6	Sudden Ionospheric Disturbances	415A126	416A117	417A119	418A119	419A124	420A122	421A126	422A130	423A125	424A126	425A122	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA												
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	415A155	416A158	417A158	418A158	419A160	420A160	421A159	422A170	423A166	424A147	425A144	
D.1ba	27-day Chart of Kp Indices	415A157	416A160	417A160	418A160	419A162	420A162	421A161	422A172	423A168	424A149	425A146	
D.1c	27-day Chart of C9												
D.1d	Principal Magnetic Storms	415A158	416A163	417A163	418A163	419A165	420A165	421A164	422A175	423A171	424A152	425A149	
D.1e	Reduced Magnetograms												
D.1f	Sudden Commencement and Solar Flare Effects	415A160	416A164	418B 76	419B 63	419A166	421B 42	422B 90	422A177	423A172	425B 33	425A150	
D.1g	Equatorial Indices Dst	416B 90	416A162	417A162	418A162	419A164	420A164	421A163	422A174	423A170	424A151	425A148	
D.1h	Geomagnetic Substorm Log (Boulder)	414A 43	415A 46	416A 43	417A 38	418A 39	419A 39	420A 41	421A 41	422A 43	423A 42	424A 41	425A 38
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F.1a	Cosmic Ray Neutron Counts (Deep River)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	425A143	
F.1b	Cosmic Ray Neutron Counts (Climax)	416B 88	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	425A143	
F.1e	Cosmic Ray Neutron Counts (Alert)	415A154	416A151	417A151	418A151	420B 78	420A155	421A158	422A165	423A161	425B 32	425A143	
F.1f	Cosmic Ray Neutron Counts (Calgary)												
F.1h	Cosmic Ray Neutron Counts (Thule)	419B 62	419B 62	419B 62	419B 62	419A153	420A155	421A158	422A165	423A161	424A146	425A143	
F.1i	Cosmic Ray Neutron Counts (Kiel)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161		425A143	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161		425A143	
F.1k	Cosmic Ray Neutron Counts (Kula)												
F.1l	Cosmic Ray Neutron Counts (Huancayo)		417B 67	418B 72	419B 58	420B 79	420A155	421A158	423B 81	425B 32	425B 32		
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H.62	Abbreviated Calendar Record	420B 58	422B 76	423B 62									

NOTES:

"415A 52" listed under 1979 Jan means that the sunspot drawings for January 1979 were contained in *Solar-Geophysical Data* Number 415 - Part I, beginning on page 52.

A = Part I, B = Part II.

---- = no data available.
blank = data not yet received.

SGD 425 Part II (Comprehensive)

JULY 1979 DATA

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NOTE ON SOLAR FLARE DATA DELAY:

Solar Flare data for publication are now ten months delayed from date of observation, rather than the usual six months. Several problems have caused this delay. A basic step of flare processing is using the Carte Synoptique de la Chromosphere to identify active centers. Because these Carte Synoptique data are also currently delayed, the Meudon Observatory staff, who performs this analysis, are hindered in their efforts. Meudon is also changing to another computer, which can mean computer program conversion problems that can delay the work. NGSDC is also working on some conversion problems.

A delay in the final listing of the solar flare data also delays the Daily Flare Index, the Regional Flare Index and the Abbreviated Calendar Record. We deeply regret this situation and hope it will improve in the near future. We ask for your patience in the interim.

For researchers who need the solar flare data more promptly, NGSDC has available "Preliminary" final listings of solar flares for April-August 1979. These fairly complete listings do not have the final Meudon corrections, and thus will not be published until we receive these corrections. However, they are available on request with the stipulation that they are recognized as "Preliminary" final listings when used in research projects. A fee may be charged for reproducing these data if a large demand ensues. Please contact the editor, Helen Coffey, for copies of these listings (phone: (303) 499-1000 X6223; FTS: 323-6223; Telex: SOLTERWARN BLDR 45897.)

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
1	200	GORK	43	NS	0300 E		262 D		5		
	100	GORK	44	NS	0300 E		135 D		5		
	260	ONDR	44	NS	0655 E		442 D	26			
	410	SGMR	44	NS	0913 E	2056.2	907 D	24.8			
	245	SGMR	44	NS	0913 E	1812	907 D	71.8			
	650	GORK	1	S	0503.4	0506.9	6	4	2		
	9100	GORK	24	R	0810.5		60 D				
	536	ONDR	42	SER	0817	0934.5	77.5	11			
	930	BORD	41	F	0819	0819.6	1	150	3		
	33	UPIC	4	S/F	0839.5	0839.6	.9				
	29	UPIC	2	S/F	0839.7	0840	.4				
	536	ONDR	3	S	1045.6	1045.8	.2	20			
	3000	BERL	1	S	1147.5	1148	1.2	5.7			
	930	BORD	41	F	1147.5	1147.8	.3	46	2		
	1470	BERL	1	S	1147.5	1147.6	1.5	4.2			
	2800	OTTA	1	S	1147.8	1148 2	1	3.6	1.8		
	127	TORN	2	S/F	1306.8	1309.2	1.6	13	4		
	4995	BOUL	4	SF	1617	1618.5	3.5	26	9		
	2800	OTTA	1	S	1618.2	1619	4	9.2	3.1		
	2695	BOUL	3	S	1619.5E	1620.5	2 D	13	4		
	7000	SAOP	3	S	1619.6	1620.2	1.2	11			21L
	2695	BOUL	29	PBI	1621.5E	1623 U	12 D	6	2		
	4995	BOUL	40	F	1627	1643.5	17.5	11	4		
	606	SGMR	3	S	1804.4	1805.6	3.3	39.3	11.8		
	410	SGMR	6	S	1804.7	1806.5	3.1	125	36		
	1415	SGMR	3	S	1806.3	1806.5	1.2	38.4	11.5		
	930	BORD	8	S	1806	1806.7	1.2	69	4		
	2800	OTTA	1	S	1806	1806.5	1	2.6	1		
	1420	BOUL	4	SF	1806 E	1806.5	1 D	31	10		
	1420	BOUL	29	PBI	1807 E	1807	2 D	4	1		
	9400	HUAN		S	1832	1838.6	19	6.5	4.7		0
	2800	OTTA	4	S/F	1916	1921.3	10	23.4	4.6		
	2695	BOUL	23	GRF	1918 E	1922	6.5D	24	8		
	2806	OTTA	20	GRF	2025	2033	45	2.6	1.3		
	4995	BOUL	4	SF	2305.5	2307	4.5	59	20		
	4995	SGMR	3	S	2306.6	2307.3	2	51	15		
	700	SYDN	45	C	2306.8	2306.1	1.5				
	15400	SGMR	3	S	2306.8	2307.9	2.4	48	14		
	1400	SYDN	45	C	2306.8	2308	1 7				
	500	HIRA	46	C	2306.9	2307.3	1	125	45		
	8800	SGMR	3	S	2306.9	2308	2.1	84	25		
	17000	NOBE	2	S/F	2307	2308	4	40			R
	4995	MANI		S/F	2307	2308	2	4 157.2	52.4		
	200	HIRA	46	C	2307	2308	2	1000	300		WL
	2695	MANI	3	S	2307	2309.1	2.8	27.2	9.1		
	100	HIRA	46	C	2307	2308	2	1800	500		WL
	1415	SGMR	1	S	2307	2307.9	1.5	9.6	2.9		
	8800	MANI	4	S/F	2307	2308.2	2.3	168.8	56.3		
	410	SGMR	6	S	2307	2308	2.2	65	20		
	606	SGMR	3	S	2307	2307.8	1.6	25	7.5		
	1415	MANI		S	2307.2	2308.3	1.8	3 21.4	7.1		
	245	SGMR	7	S	2307.2	2308	2	430	129		
	2695	SGMR	3	S	2307.4	2307.8	1 3	19	5.6		
	2695	PENT	4	S/F	2307	2307.2	2	19.4	9.7		
	2695	BOUL	4	SF	2308 E	2309	1 5D	20	7		
	2695	BOUL	29	PBI	2309.5E	2309.5	2.5D	13	4		
2	260	ONDR	44	NS	0542 E		511 D	91	4		
	410	SGMR	44	NS	0915 E	1431.8	904 D	12,1			
	245	SGMR	44	NS	0915 E	2200.9	904 D	444			
	127	TORN	43	NS	0944	1408.4	320	140	2.3		V1
	228	HARS	45	C	0859.4	0859.5	3.2	390	50		
	1470	BERL	1	S	0859.5	0900.6	2.5	4.1			
	3000	BERL	1	S	0859.5	0900.5	2.2	6.4			
	9100	ARCE	1	S	0859.7	0901.2	7.2				
	950	GORK	1	S	0859.8	0900.9	3 2	3	1.5		
	9100	GORK	1	S	0859.8	0900.9	4.7	7	3.5		
	234	POTS	41	F	0900	0900.2	2.8	350	2		
	650	GORK	1	S	0900	0900.8	3	1.5			
	2950	GORK	1	S	0900.1	0900.2	1 1	4	2		
	200	GORK	4	SF	0900.1	0900.9	3	50 D			
	113	POTS	41	F	0900.5	0900.7	2.3	100	7		
	100	GORK	46	C	0900.6	0900.9	2.8	120 D			
	100	GORK			0900.6	0902.8		120			
	536	ONDR	42	SER	0954	0955	19	13			
	1470	BERL	4	S/F	1011	1011.6	1	13			
	8800	SGMR	3	S	1128.6	1129.6	1.7	75	23		
	2806	OTTA	240	R	1140	1300	80	7.4	4		
	9100	ARCE	23	GRF	1227.9	1230.5	10.2				RECORD DISTURBE
	9100	ARCE	8	S	1231.2	1231.5	.6				
	9100	ARCE	1	S	1407.1	1408.6	2.6				
	1415	SGMR	1	S	1407.8	1408.4	1.2	3.2	1		3G
	7000	SAOP	1	S	1407.8	1408.4		7			16R
	8800	SGMR	1	S	1407.9	1408.5	1.4	5.4	1.6		3G

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	4995	SGMR	1 S	1400	1400.5	1.3	6 2	1.9		3G
	2695	SGMR	1 S	1400.2	1400.6	1	5.3	1.5		3G
	2695	PENT	1 S	1400	1400.4	1.5	6	3		
	2800	OTTA	20 GRF	1420	1713	270	12.8	6.4		
	9100	ARCE	2 S/F	1422.3	1424.5	3.8				
	2800	OTTA	22 GRF	1858	1902	25	5.8	2		
	2800	OTTA	22 GRF	2007	2010	25	9	3		
	4995	BOUL	4 SF	2015	2017	5	16	5		
	1420	BOUL	20 GRF	2105 E	2107	4 D	9	3		
3	1420	BOUL	22 GRF	0116 E	0122 U	9.5D	4	1		
	260	ONDR	44 NS	0540 E		513 D	84	2		
	410	SGMR	44 NS	0915 E	1039.1	904 D	26			
	245	SGMR	44 NS	0915 E	1907.6	904 D	530			
	9100	ARCE	1 S	1033.5	1034.3	2.2				
	2800	OTTA	21 GRF	1055	1120	65	8.2	4.1		
	1470	BERL	20 GRF	1110	1125	23	2.1			
	3000	BERL	22 GRF	1114	1120	26	9 1			
	7000	SAOP	20 GRF	1116		24	11			10R
	9500	BERL	20 GRF	1117	1122.5	29				
	9100	ARCE	21 GRF	1118.3	1123.4	29.5				
	9100	ARCE	1 S	1135.5	1136	1.2				
	2800	OTTA	8 S	1137.7	1138	.8	2.4	1.2		
	650	GORK	3 S	1202	1202.1	2	54			
	2800	OTTA	8 S	1207.9	1208	.5	2	1		
	536	ONDR	42 SER	1218.3	1218.3	12	21			
	7060	SAOP	45 C	1220.2	1222.2	2.4	11			15R
	9100	GORK	22 GRF	1220.4	1231.1	20.5	11	5		
	9100	ARCE	22 GRF	1220.4	1236	31				
	4995	SGMR	20 GRF	1220.5	1229.1	16.5	9.6	2.8		
	2695	SGMR	3 S	1222.3	1231.1	13.3	19.6	5.9		
	1470	BERL	46 C	1226.5	1231	10	23			
	3000	BERL	40 R	1226.5	1230.8	14	9.9			
	1415	SGMR	3 S	1226.6	1230.7	8.9	27.2	8.2		
	2800	OTTA	22 GRF	1226	1231	23	10.4	3.5		
	808	ONDR	2 S/F	1228.3	1230.6	7	30	9		
	9400	HUAN	S	1228.4	1237.1	14	9.4	5.3		0
	2950	GORK	1 S	1228.8	1231	4	13	7		
	950	GORK	4 SF	1229	1230.6	10.4	23 D			
	650	GORK	1 S	1229.1	1229.4	2.8	11	2		
	930	BORD	45 C	1229	1230.6	8	70	5		
	7000	SAOP	27 RF	1255.4						0
	113	POTS	8 S	1325.8	1325.8	.3	42000	8000		
	2800	OTTA	27APRF	1815		90	4	3.3		
	2800	OTTA	24 R	1815	1825	10	4			
	2800	OTTA	24P R	1825		60	4			
	228	HARS	45 C	1906.2	1907	1.8	260	90		
	2800	OTTA	8 S	1907.5	1907.5	.5	1.8			
	2800	OTTA	1 S	1911	1911.5	1	1.8			
	2806	OTTA	26 FAL	1929	1945	20	-4	-2		
	2800	OTTA	2 S/F	1958	1958.7	1.5	3	1.6		
	2800	OTTA	20 GRF	2020	2044	50	6.6	2.2		
	2695	PENT	21 GRF	2225	2308	85	6	3		
	4995	BOUL	4 SF	2257	2258.5	2.5	17	6		
	2800	OTTA	1 S	2258.5	2259	1.5	1.8	.9		
	700	SYDN	45 C	2303	2305.4	6				
	1415	SGMR	3 S	2303.4	2306.5	4.8	13	4		
	606	SGMR	3 S	2304	2307.6	4.5	105	31		
	1400	SYDN	41 F	2304.7	2306.7	3.8				
4	2695	PENT	23 GRF	0115	0123	30	3.6	1.8		
	2695	PENT	1 S	0120.7	0121	2	4.8	2.4		
	1420	BOUL	1 S	0139 E	0139	1 5D	9	3		
	506	HIRA	41 F	0202.6	0310.7	275	100	15		
	200	HIRA	27 RF	0202	0242	218	200	50		ML
	700	SYDN	46 C	0205.3	0222	34.7				
	1400	SYDN	41 F	0206	0221.4	28				
	100	HIRA	27 RF	0217	0254	458 D	1000	200		SL
	17000	NOBE	21 GRF	0219.9	0346	340 D	20			0
	700	SYDN	41 F	0238.8	0245.8	21.5				
	700	SYDN		0238.8	0255.6					
	1400	SYDN	48 C	0239	0247.5	33.1				
	1415	MANI	4 GB	0241.2	0241.1	16 8	7 1059.2	353.1		
	2695	MANI	4 S/F	0245	0252.3	13	377.9	125.9		
	200	GORK	44 NS	0251.7		588 D		40		
	100	GORK	44 NS	0255 E		300		30		
	260	ONDR	44 NS	0546 E		495 D	185	27		
	127	TORN	44 NS	0730 E		480 D		160		V1
	113	POTS	43 NS	0855	0950	365 D	1000			
	410	SGMR	44 NS	0916 E	2028.2	902 D	52.7			
	245	SGMR	44 NS	0916 E	1051.7	902 D	256			
	200	HIRA	44 NS	1930 E	2050 U	760 D	40	15		MRML
	950	GORK	4 F	0253 E	0259	6.2D	104			
	950	GORK	29 PBI	0253 E	0259.2	54.8	31.5			
	650	GORK	23 GRF	0257 E		180				

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
4	650	GORK	4	SF	0258.5	0259	16	27	11		
	950	GORK	4	SF	0300.5	0303.4	8.3	22			
	2950	GORK			0300 U		3				
	700	SYDN	4	S	0309.6	0311.3	2.7				
	606	MANI	4	GB	0310.2	0322.3	25.4	7 567.7	189 2		
	650	GORK	4	SF	0310.4	0311.7	2.3	36 D	18		
	1400	SYDN	40	F	0317.2	0319.7	5.3				
	700	SYDN	4	S	0318.5	0319.2	1.5				
	650	GORK	46	C	0318.7	0319.3	5.3	30	15		
	650	GORK			0318.7	0322.5		40 D			
	700	SYDN	46	C	0321.1	0321.8	1.9				
	700	SYDN	40	F	0327.7	0332.4	6.8				
	650	GORK			0328.9	0335.7		38			
	650	GORK	45	C	0328.9	0330	7.1	19			
	650	GORK	45	C	0328.9	0332.6		52			
	1400	SYDN	8	S	0340.3	0340.6	.6				
	1400	SYDN	8	S	0341	0341.1	.6				
	700	SYDN	45	C	0348.3	0349.9	2.9				
	606	MANI		S/F	0348.5	0349	3.2	4 86.7	28.2		
	650	GORK			0348.9	0350		80			
	650	GORK	45	C	0348.9	0349.3	2	80			
	2950	GORK	3	S	0408.4	0408.6					
	536	ONDA	23	GRF	0546 E		54 D	17	10		
	10400	BERN	4		0601.5	0608.8	33	493			
	9100	GORK	23	GRF	0601.7	0612.6	38.5	18	9		
	2950	GORK	21	GRF	0606	0608.6	97	26			
	4995	MANI		S/F	0607.1	0609	5	4 408.5	133.5		
	9100	GORK	4	SF	0607.7	0609 U	3.8	168 D			
	8800	MANI	47	GB	0608	0609	3	570.2	190.1		
	17000	NOBE	4	S/F	0608.6	0608.9	2.3	291			R
	2950	GORK	3	S	0608.6	0609.2	2.8	170	85		
	2695	MANI	3	S	0608.6	0608.9	1.6	118.1	39.4		
	1415	MANI		S	0608.7	0608.9	.4	3 12.6	4.2		
	2650	DWIN	3	S	0608	0609	7	110	50		
	950	GORK	1	S	0609	0609.3	.6	4	2		
	35000	NAGO	5	S	0609	0609	2	32			
	9100	ARCE	22	GRF	0839.2	0850.4	61.5				RECORD DISTURBE
	9100	GORK	22	GRF	0840.5	0849.3	99	38	19		
	650	GORK	22	GRF	0840.7	0957.1	87.3	9.5			
	2950	GORK	23	GRF	0840.7		230				
	2650	DWIN	45	C	0840	0850	40	60	20		
	10715	DWIN	20	GRF	0842	0850	80	30	20		
	950	GORK	20	GRF	0844.3	0851	11	9	3 5		
	200	HIRA	46	C	0845	0920 U	50 D	600 U	100 U		ML
	2950	GORK	46	C	0846.2	0848.5	6.1	40			
	2950	GORK			0846.2	0850.7		48			
	9500	BERL	40	F	0846 E		43 D				
	1470	BERL	40	F	0846 E	0902.3	43 D	22			
	3000	BERL	40	F	0846 E	0850.3	43 D	62			
	200	GORK	46	C	0900	0910.7U	29.5	170 D			
	200	GORK			0900	0929.6		680			
	200	GORK			0900	0921.5		480			
	950	GORK	4	SF	0900.5	0903.5	5.5	78 D			
	808	ONDR	45	C	0901.3	0903.2	7	268	10		
	930	BORD	46	C	0901	0903.3	12	430	4		
	950	GORK	22	GRF	0907	0907.5	13.4	16.5			
	536	ONDR	23	GRF	0907	0954.1	75	24	11		
	950	GORK	2	SF	0954	0955.6	3	15			
	930	BORD	46	C	0954	0955.3	2	27	3		
	650	GORK	4	SF	1054.6	1055.1	3.2	40			
	536	ONDR	3	S	1105.5	1105.5	.2	14			
	15400	SGMR	3	S	1130.5	1131	9.9	40	11 9		SWF
	10400	BERN	45		1130.6	1131.2	8	45			
	8800	SGMR	3	S	1130.7	1132	6.5	60	18		SWF
	1415	SGMR	3	S	1130.7	1132.4	10.7	26	7.9		SWF
	9500	BERL	4	S/F	1131	1131.7	4				
	4995	SGMR	3	S	1131	1131.4	4.9	57	17		SWF
	1470	BERL	3	S	1131	1132.5	5	32			
	3000	BERL	3	S	1131	1131.4	5	58			
	2950	GORK	4	SF	1131.2	1131.9	4.9	96			
	2695	SGMR	3	S	1131.2	1132.1	5.9	79	24		SWF
	9100	GORK	4	SF	1131.3	1132.3	1.5	50			
	7000	SAOP	45	C	1131.8	1132.9	5	52			4L
	2800	OTTA	3	S	1131	1131.5	5	65	18		
	9100	ARCE	4	S/F	1131	1132.1	2.4				
	10715	DWIN	2	S/F	1131	1132	2	30	20		
	2650	DWIN	3	S	1131	1132	6	65	30		
	950	GORK	2	SF	1132	1134.5	3.9	6			
	9100	GORK	30	PBI	1132.8E	1132.8	42	18			
	9100	ARCE	29	PBI	1133.4	1134.4	45.3				
	9100	GORK	1	S	1133.6	1134.7	2.1	4	2		
	2800	OTTA	26	FAL	1300	1340	40	-5	-2.5		
	9100	ARCE	22	GRF	1419.6	1443	38				
	9400	HUAN		S	1421.3	1443	34.2	11.8	4		8
	606	SGMR	3	S	1439.5	1439.9	2.8	16	4.8		

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
4	1415	SGMR	3 S	1439 5	1439.9	2.8	22	6.6		
	245	SGMR	6 S	1439.5	1440	1.8	119	36		
	410	SGMR	6 S	1439.6	1440.2	2 6	169	51		
	930	BORD	41 F	1439	1440.8	3	31	2		
	1420	BOUL	45 C	1439 E	1439.5	1.5D	4	1		
	2800	OTTA	26 FAL	1450	1550	60	-5.4	-2.7		
	4995	BOUL	4 SF	1639.5	1640.5	2	22	7		
	7000	SAOP	4 S/F	1640.4	1641.3	2.8	27			18R
	2800	OTTA	3 S	1640.5	1641	3	21.2	5.2		
	9400	HUAN	S	1640.7	1641 2	1	25.4	13.2		R
	10400	BERN	1	1640.7	1641.1	2	20			
	2695	BOUL	3 S	1641.5E	1642	2 D	21	7		
	10715	DWIN	1 S	1641	1641.5	1	15	10		
	9100	ARCE	4 S/F	1641	1641,4	1.5				
	2650	DWIN	1 S	1641	1641.5	1	20	10		
	2800	OTTA	23 GRF	1720	1730	75	4.2	2 4		
	9400	HUAN	S	1723.6	1809.2	61.1	18.6	7.6		R
	606	SGMR	3 S	1726	1729	8	220	66		3G
	1415	SGMR	1 S	1727.6	1728.8	8.5	6 4	1.9		3G
	936	BORD	46 C	1727	1728.8	10	46	6		
	2800	OTTA	1 S	1728.5	1728.7	1	6	3		
	1420	BOUL	41 F	1728 E	1742.5	29.5D	9	3		
	2800	OTTA	8 S	1732	1732 2	.3	6.3			
	1415	SGMR	3 S	1736.3	1742.7	8.7	11.5	3.5		3G
	245	SGMR	6 S	1739	1743.2	10	8.2	2.5		3G
	410	SGMR	6 S	1739	1742.1	12	4	1.2		3G
	7000	SAOP	45 C	1739.2	1743.1	4	14			13R
	2800	OTTA	2 S/F	1740	1743	6	7.2	3		
	606	SGMR	3 S	1741.3	1743.6	4	13	4		3G
	1415	SGMR	3 S	1802.9	1809	8.4	23.4	7		2,CONT SWF
	930	BORD	46 C	1806	1809.4	6	89	7		
	9400	HUAN	S	1857	1930	120.1	50.7	38.4		R
	9400	HUAN		1857	1939.5		81.8			RLR
	245	SGMR	49 GB	1858	1937.4	61	554	166		2,CONT SWF
	245	SGMR	49 GB	1858	1917.5		131			2,CONT,SWF
	228	HARS	27 RF	1901	1938,4	61	560	110		
	410	SGMR	49 GB	1904	1934	52.5	6100	1830		2,CONT,SWF
	2800	OTTA	21 GRF	1905	1945	355	45	17.4		
	1415	SGMR	45 C	1906.5	2002.6	84	275	82.5		2,CONT,SWF
	1415	SGMR	45 C	1906.5	1959.2		218			2,CONT SWF
	1415	SGMR	45 C	1906.5	1919.5		258			2 CONT,SWF
	1415	SGMR	45 C	1906.5	1914.2		160			2,CONT,SWF
	2695	SGMR	45 C	1910.5	2002.6	78.7	348	10.4		2,CONT,SWF
	1420	BOUL		1910.5E	2003		246	82		
	4995	SGMR	45 C	1910.5	1919.9		181			2,CONT,SWF
	606	SGMR	47 GB	1910.5	2003.3		58.3			2,CONT,SWF
	2695	SGMR	45 C	1916.5	1936.3		114			2,CONT,SWF
	1420	BOUL	41 F	1910.5E	1919.5	28 D	354	118		
	606	SGMR	47 GB	1910.5	1929.2	67.5	3100	93		2,CONT,SWF
	1995	SGMR	45 C	1910.6	1919 5	78.6	186	55.8		2 CONT,SWF
	4995	SGMR	45 C	1910.6	1939.2		103			2,CONT,SWF
	4995	BOUL		1910	1938.5		114	38		
	4995	BOUL	42 SER	1910	1920	41.5D	58	19		
	7000	SAOP	45 C	1911	1939.5	51	79			4L
	2695	BOUL		1911.5E	2003.5		331	110		
	2695	BOUL	42 SER	1911.5E	1920.5	86 D	193	64		
	2800	OTTA	4 S/F	1911	1913 7	5	14	4.8		
	8800	SGMR	45 C	1912	1920.2	69.4	91.8	27.5		2,CONT,SWF
	8800	SGMR	45 C	1912	1939,5		71.4			2,CONT,SWF
	2800	OTTA	4 S/F	1918	1919.6	3	121	30		
	2800	OTTA	45 C	1924	1930.1	20	60	29		
	15400	SGMR	3 S'	1935	1939.8	9.5	34.5	10.4		2,CONT,SWF
	2800	OTTA	40 F	1954.5	2002.7	12.5	205			
	500	HIRA	41 F	2000 E	2006.3	120 D	45	20		ML
	606	SGMR	20 GRF	2018	2027.4	32	10.8	3.3		CONT
	2800	OTTA	2 S/F	2024	2024.6	2	8.4	2.8		
	2800	OTTA	20 GRF	2230	2231.5	50	7.6	2.5		
	245	SGMR	49 GB	2320.2	2321.4	11.2	1100	222		
5	606	MANI	S/F	0142.4	0147.3	19.6	4 136.7	45.6		
	9100	GORK	2 SF	0442.3	0443.4	5	10	5		
	260	ONDR	44 NS	0546 E		497 D	64	8		
	127	TORN	43 NS	0726	0749.2	61	90	3.5		V1
	410	SGMR	44 NS	0916 E	2234.5	902 D	26.3			
	245	SGMR	44 NS	0916 E	1029.7	902 D	57.6			
	127	TORN	43 NS	0938	0939.6	102	34	.5		V0
	200	HIRA	43 NS	2202	2240	218	30	25		MLMR
	100	HIRA	43 NS	2208	0100	382	150	100		MLSR
	200	GORK	4 SF	0649	0651.8	3.2	120			
	113	POTS	4 S/F	0651.1	0651.7	1.4	14000	250		
	9100	ARCE	4 S/F	1008.6	1009.2	1.6				

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	9100	ARCE	29 PBI	1010.2		41 S				
	536	ONDR	3 S	1222.1	1222.1	2	20			
	536	ONDR	3 S	1246.2	1246.2	2	25			
	2800	OTTA	21 GRF	1725	1820	115	3.4	1.7		
	9400	HUAN	S	1727.6	1802.8	40	6.7	2 4		L
	2800	OTTA	4 S/F	1758.5	1801	7	12	4		
	9400	HUAN	S	1821.6	1836.8	60.1	5	2 3		0
	9400	HUAN	S	1833	1834	1.0	35.3	12.4		L
	9100	ARCE	3 S	1833.8	1834	1 5				
	2800	OTTA	20 GRF	2210	2225	110	6.2	3.1		
	606	SGMR	3 S	2223.4	2223.6	.6	151	45.3		5
	410	SGMR	6 S	2223.4	2223.6	.7	53.3	16		5
6	2695	PENT	20 GRF	0131.5	0134	14	6.6	3.3		
	200	GORK	43 NS	0300		225		5		
	100	GORK	44 NS	0333 E		87 D		5		
	260	ONDR	44 NS	0540 E		514 D	87	2		
	245	SGMR	43 NS	1219.8	1248.1	220 2D	300			
	228	HARS	45 C	1246.2	1248	9	250	90		
	127	TORN	2 S/F	1247.4	1248	1.8	28	13		DISTURBED
	127	TORN	45 C	1304	1304.8	14	32			
	2800	OTTA	20 GRF	1545	1605	80	4 2	2.1		
	9400	HUAN	S	1832.5	1859.8	38.8	6.3	2.5		0
	2800	OTTA	20 GRF	1835	1955	140	4 4	2.2		
	500	HIRA	45 C	2039.1	2040	4	25	15		MR
	2800	OTTA	2 S/F	2141	2142.5	8	4.2	2.1		
7	200	GORK	44 NS	0411 E		246		10		
	100	GORK	43 NS	0435		325		10		
	260	ONDR	44 NS	0532 E		525 D	74	10		
	127	TORN	44 NS	0620 E	1258.8	560 D	302	11		V1
	113	POTS	43 NS	0905	1005.5	355 D	280			
	245	SGMR	44 NS	0918 E	2314.4	900 D	104			
	408	TRST	44 NS	0924		170	80			
	200	HIRA	27 RF	0430	0505	75	20	10		ML
	100	GORK	8 S	0433.6	0433.9	1 1	120			
	100	HIRA	27 RF	0433	0541	107	170	60		SL
	200	GORK	41 F	0434.2	0434.7	11	50 D			
	200	GORK		0434.2	0443.7		50 D			
	500	HIRA	46 C	0444	0444.5	4	26	10		WL
	228	HARS	45 C	0755.6	0756.6	1 9	240	60		
	808	ONDR	3 S	0804.3	0804.3	.2	50			
	930	BORD	41 F	0804	0804.1	.8	152	2		
	228	HARS	27 RF	0850	0940	325	260	70		
	536	ONDR	23 GRF	0903	0942.2	202	84	32		
	808	ONDR	23 GRF	0903	0949.3	89	35	29		
	930	BORD	40 F	0932	0949	59	32	14		
	2800	OTTA	20 GRF	1135	1140	30	2.2	1.4		
	408	TRST	42 SER	1212.6	1212.8	2.2	280			
	2800	OTTA	2 S/F	1222.2	1222.5	3	4.2	2.1		
	4995	BOUL	46 C	1510.5	1511	4	33	11		
	9400	HUAN	S	1707.8	1731.8	81.2	4.8	1.8		0
	2800	OTTA	26 FAL	1740	1905	95	-6			
	930	BORD	41 F	1741	1744.7	5	32	3		
	200	HIRA	46 C	2031	2032.2	3	250	100		MR
	410	SGMR	6 S	2031.2	2032.4	2.2	16.7	5		
	245	SGMR	6 S	2031.2	2032 3	2.3	248	74.4		
	1415	SGMR	1 S	2031.4	2032.2	1.6	4.4	1 3		
	2800	OTTA	3 S	2031.7	2032	2	12	4		
	606	SGMR	1 S	2031.9	2032.3	1.1	6.5	2		
	100	HIRA	46 C	2031	2032.5	3	190	80		0
	2695	BOUL	3 S	2032 E	2032.5	2.5D	11	4		
	1420	BOUL	20 GRF	2140 E	2145 U	11.5D	14	5		
	2800	OTTA	24C R	2220	2232	12	4.2	2.1		
8	410	SGMR	44 NS	0918 E	2342.6	900 D	37			
	245	SGMR	44 NS	0918 E	1045.3	900 D	147			
	1470	BERL	22 GRF	1125	1135	23	10			
	3000	BERL	20 GRF	1127	1140	106	12			
	9500	BERL	20 GRF	1135	1155	62	22			
	9400	HUAN	S	1259	1346.3	107.8	9.9	5.7		0
	228	HARS	45 C	1315.2	1316	2.4	160	40		
	7000	SAOP	40 F	1538						0
	2800	OTTA	24O R	1605	1649	75	4	2		
	4995	BOUL	4 SF	1737.5	1738.5	2	13	4		
	4995	BOUL	4 SF	2025	2027	4	43	14		
	9400	HUAN	S	2026	2028	3.7	61	27		R
	8800	SGMR	3 S	2026.5	2028.2	5 9	58.7	17.6		SWF
	1415	SGMR	3 S	2026.5	2027.3	8 5	20.4	6.1		SWF
	4995	SGMR	3 S	2026.8	2028	5.8	41.2	12 4		SWF
	1420	BOUL	21 GRF	2026 E	2028	10 D	21	7		
	2800	OTTA	4 S/F	2026	2028.2	4	62	21		
	15400	SGMR	3 S	2027	2027.9	2	20.7	6.2		SWF
	2695	SGMR	3 S	2027.4	2028.5	5.4	55.4	16.3		SWF
	2695	BOUL	46 C	2027.5E	2029	4 D	72	24		

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	1420	BOUL	8 S	2030 E	2030 U	1 D	53	18		
	2800	OTTA	29 PBI	2030	2030	75	6.4	3 2		
	2800	OTTA	20 GRF	2200	2210	50	4.4	2 2		
9	100	GORK	44 NS	0258 E		50		10		
	100	GORK	41 F	0343	0343.0	6	300 D			
	100	GORK		0343	0347.3		300 D			
	33	UPIC	2 S/F	0343.4	0343.5	1				
	29	UPIC	4 S/F	0343.5	0343.7	.7				
	9100	GORK	1 S	0416.4	0416.8	3.5	5	2.5		
	260	ONDR	44 NS	0547 E		509 D	37			
	930	BORD	41 F	1153.2	1153.4	.4	120	2		
	2800	OTTA	21 GRF	1345		85	8.8			
	9460	HUAN	S	1350.3	1357.8	45.7	11.2	2.8		R
	4995	BOUL	4 SF	1356	1357	2	14	5		
	3000	BERL	3 S	1357	1357.9	1.5	20			
	7800	SAOP	4 S/F	1357	1357.9	2.6	13			43R
	4995	SGMR	3 S	1357.2	1358.1	1.8	18.5	5.5		
	2800	OTTA	3 S	1357.2	1358	2	17.4	8.7		
	8800	SGMR	1 S	1357.3	1358	1.8	6.9	2.1		
	1415	SGMR	1 S	1357.4	1358.2	1.7	4.8	1.4		
	9100	ARCE	1 S	1357.5	1358	3.5				
	606	SGMR	3 S	1357.5	1357.7	.9	284	57		
	1470	BERL	1 S	1357.5	1358.4	1.5	5.2			
	9500	BERL	1 S	1357 5	1358	1.5	9.4			
	536	ONDR	42 SER	1357.7	1357.7	7	78			
	2695	SGMR	3 S	1357.8	1358.2	1.4	20.1	6		
	2650	DWIN	1 S	1357	1358	2	25	10		
	2695	BOUL	3 S	1358 E	1359	2.5D	19	6		
	2806	OTTA	24 R	1545	1550	5	1.0	.9		
	2800	OTTA	27A RF	1545		395	1.8	1.7		
	2800	OTTA	24P R	1550		370	1.8			
	9100	ARCE	20 GRF	1604.5	1607.6	53				
	2806	OTTA	20 GRF	1630	1650	60	2	1		
	2800	OTTA	22 GRF	1850	2040	195	6.4	3.2		
	2800	OTTA	26 FAL	2210	2230	2e	-1.8	-.9		
	2695	PENT	20 GRF	2325	2331.5	55	5	2.5		
10	9100	GORK	1 S	0408	0408.7	2.1	4	2		
	2950	GORK	1 S	0419.6	0422.6	3.2	15	7		
	260	ONDR	44 NS	0544 E		510 D	18			
	650	GORK	1 S	0544.5	0545	2.6	4	2		
	10715	DWIN	1 S	0940	0940.5	1	30	20		
	9100	GORK		0944.4	0953.4		33			
	9100	GORK	45 C	0944.4	0945.3	12.4	40			
	9500	BERL	3 S	0944.7	0945.3	2.3	30			
	9100	ARCE	3 S	0944.9	0945.5	2.6				
	10400	BERN	3	0945.3	0946.1	1.5	32			
	9500	BERL	3 S	0947	0947.9	2	25			
	10715	DWIN	1 S	0948	0949	2	20	10		
	10400	BERN	3	0952.2	0953.2	2	20			
	9100	ARCE	3 S	0952.6	0953.4	3				
	930	BORD	46 C	0953.7	0953.8	.3	50	3		
	9100	ARCE	2 S/F	1031.8	1032	1.4				
	2800	OTTA	22 GRF	1200	1209	150	5.8	2.9		
	127	TORN	45 C	1335	1336	2.5	325	82		
	930	BORD	8 S	1425	1425	.1	73	1		
	2650	DWIN	2 S/F	1515	1518	5	30	10		
	10715	DWIN	3 S	1515	1518	7	110	60		
	9400	HUAN	S	1816.8	1819	4.2	9.8	4.3		6
	7800	SAOP	45 C	1833.3	1834.3	8	19			0
	9400	HUAN	S	1833.7	1834.8	2.8	11.4	7.7		R
	2800	OTTA	1 S	1834	1834.5	1 5	2.6	1.3		
	2800	OTTA	20 GRF	2120	2124	16	4.4	2		
11	260	ONDR	44 NS	0545 E		510 D	67	2		
	930	BORD	8 S	0947	0947.2	.3	86	2		
	408	TRST	41 F	1037.6	1038	1.2	130 D			
	228	HARS	45 C	1038	1038.3	1	170	60		
	3000	BERL	3 S	1128	1129.8	5.5	12			
	127	TORN	27 RF	1508	1512.4	5.8	477			
	4995	BOUL	4 SF	1513	1516 5	7	96	32		
	2800	OTTA	21 GRF	1514	1520	40	2.8	1.4		
	7800	SAOP	4 S/F	1515	1517.8	4.4	256			7R
	10400	BERN	4	1515	1517.8	8	133			
	9400	HUAN	S	1515.2E	1517.7	6.5	183.1	69		R
	9100	ARCE	4 S/F	1515.5	1518	8				
	8800	SGMR	3 S	1516	1518.8	8	242	72.6		5,SW$_F$
	4995	SGMR	3 S	1516	1518	6	115	34.5		5,SWF
	2695	SGMR	3 S	1516	1517.2	4.8	17	5.1		5,SWF
	2800	OTTA	4 S/F	1516.8	1518	3.2	11.2	5		
	228	HARS	45 C	1517.6	1518.5	1.3	80	25		
	9400	HUAN	S	1526.8	1540	32.7	6.7	4.7		0
	2800	OTTA	26 FAL	1610	1640	30	-2	-1		
	2800	OTTA	27 RF	1952		40	3	2.4		

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	2800	OTTA	24 R	1952	1954	2	3	1.5		
	2800	OTTA	24P R	1954		27	3			
	2800	OTTA	26 FAL	2021	2030	9	-3	-1.5		
	2695	PENT	21 GRF	2310	2322	125	5.2	2.8		
	2695	PENT	20 GRF	2415	2422	30	13	5		
12	1420	BOUL	4 SF	0111.5E	0112	2.5D	16	5		
	260	ONDR	44 NS	0540 E		512 D	27			
	930	BORD	8 S	1217.5	1217.8	.5	19	2		
	29	UPIC	45 C	1217.8	1217.9	1.8				
	33	UPIC	45 C	1217.8	1217.9	2.1				
	4995	BOUL	8 S	2054.5	2055.5	2	15	5		
13	260	ONDR	2 S/F	1012.2	1013.2	2	7	3		
	260	ONDR	42 SER	1315	1328.3	21	16			
14	7000	SAOP	1 S	1108.2	1109.4		7			30R
	536	ONDR	8 S	1124	1124	.2	49			
	7000	SAOP	27 RF	1243						0
	7000	SAOP	20 GRF	1346.8			6			0
	2800	OTTA	20 GRF	1605	1700	105	2,2	1 1		
	9400	HUAN	S	1737.3	1737.6	2.1	23.1	14.6		R
	9400	HUAN	PBI	1739.4	1739.4	49.8	11.5	8		0
	2800	OTTA	20 GRF	1820	1845	40	1.8	.9		
	7000	SAOP	1 S	1841.6	1842.3		7			31R
	2800	OTTA	20 GRF	1920	1945	45	2.8	1.4		
	228	HARS	45 C	1923.6	1923.6	.8	100	25		
	9400	HUAN	S	1928.1	1936.7	41.7	4.9	3.7		0
	2800	OTTA	20 GRF	2015	2057	65	3.2	1.6		
	2800	OTTA	20 GRF	2155	2210	70	5.4	2.6		
	2695	PENT	20 GRF	2312	2319	35	4.4	2.2		
15	260	ONDR	3 S	0708	0708	.2	17			
	127	TORW	43 NS	0746	0944	300	100	2.4		V1
	260	ONDR	2 S/F	0931.7	0931.9	.5	10			
	228	HARS	45 C	1441.6	1441.6	.8	120	30		
	2800	OTTA	20 GRF	1700	1800	185	3	1.8		
	228	HARS	45 C	1948.4	1948.4	.6	170	35		
	2800	OTTA	21 GRF	2020	2045	70	2.2	1.1		
	4995	BOUL	4 SF	2021.5E	2022.5	3 D	31	10		
	9400	HUAN	S	2022.6	2023.3	1.8	67.2	25.4		L
	8800	SGMR	3 S	2022.9	2023.3	1.5	67.6	20.3		
	4995	SGMR	3 S	2023	2023.2	2.5	45	13.5		
	15400	SGMR	3 S	2023.2	2023.4	1	51.1	15.3		
	2800	OTTA	1 S	2023	2023.3	2	9.6	3.2		
	1415	SGMR	3 S	2230.9	2231.1	1	18.7	5 6		
	1420	BOUL	3 S	2231 E	2231.5	1.5D	26	9		
16	2695	PENT	3 S	0036	0039.4	7	77	19.2		
	4995	MANI	S	0037.8	0039.2	5.2	3 345.4	115.1		
	8800	MANI	3 S	0037.8	0039.1	5.2	260.3	86.7		
	2695	MANI	3 S	0037.8	0039	3.2	26.8	26.8		
	17000	NOBE	3 S	0038	0039.6	20	98			0
	1400	SYDN	3 S	0038.2	0039.3	3				
	700	SYDN	3 S	0038.3	0039.6	3.9				
	500	HIRA	46 C	0038.5	0038.7	2	70	9		WR
	4995	BOUL	4 SF	0038.5E	0041	9.5D	114	38		
	1420	BOUL	3 S	0038 5E	0039 U	4 D	15	5		
	35000	NAGO	5 S	0039	0040	9	82			
	260	ONDR	42 SER	1030	1325.8	202	67			
	2800	OTTA	1 S	1250.9	1251	1	1.4	.7		
	228	HARS	45 C	1324	1324.5	1.5	175	25		
	234	POTS	4 S/F	1325	1325.2	.6	175	20		
	2695	BOUL	41 F	1753 E	1755.5	7 D	155	52		
	2695	BOUL	41 F	1822 E	1823	4.5D	132	44		
	1420	BOUL	3 S	2136.5E	2137	2 D	15	5		
	500	HIRA	46 C	2136.8	2137.4	1	38	8		WL
	200	HIRA	46 C	2137.2	2137.5	1	110	30		0
	2695	BOUL	45 C	2137.5E	2138	1.5D	51	17		
	100	HIRA	46 C	2137.5	2137.7	1	150	70		0
	2800	OTTA	3 S	2137	2137.6	1	60	20		
17	260	ONDR	42 SER	0655	0847.1	177	8			
	260	ONDR	4 S/F	1150.6	1151.6	2	22	3		
	2800	OTTA	20 GRF	1435	1450	35	1.6	.8		
	9400	HUAN	S	1542.7	1543.5	1.4	11.5	5.9		L
	9400	HUAN	S	1659.5	1730.3	56.1	6.6	4.5		0
	2695	BOUL	41 F	1727.5E	1728	0.5D	15	5		
	2695	BOUL	41 F	1800 E	1803.5	4 D	25	8		
	2800	OTTA	20 GRF	1910	1915	100	2.6	1.6		
	2800	OTTA	4 S/F	2100.8	2101.5	1.2	11.6	5.8		
18	260	ONDR	44 NS	0547 E		507 D	13			
	930	BORD	8 S	0900	0900.1	.2	18	2		
	408	TRST	4 S/F	1056.7	1056.8	.2	91			

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	536	ONDR	3 S	1056.7	1056.7	.2	21			
	536	ONDR	2 S/F	1239	1240.5	2	13			
19	228	HARS	45 C	0321.5	0322.5	2	175	15		
	200	GORK	4 SF	0322	0322.8	2	60 D			
	228	HARS	45 C	0352.2	0352.7	1	175	50		
	200	HIRA	46 C	0352 5	0353	1	6000	500		WL
	100	HIRA	46 C	0352.5	0353	1.5	25000	5000		ML
	100	GORK	45 C	0353	0353.2	1.6	120			
	100	GORK		0353	0353.7		130 D			
	260	ONDR	44 HS	0542 E		508 D	195	5		
	228	HARS	45 C	0718.5	0720.5	4	150	30		
	228	HARS	45 C	0847.2	0847.3	.5	125	25		
	228	HARS	45 C	0848.7	0849	1	125	25		
	930	BORD	8 S	0947.6	0947.7	.2	16	2		
	9100	GORK	1 S	1052.3	1052.9	2.1	5	2.5		
	228	HARS	45 C	1054	1055	7.5	225	50		
	2695	SGMR	3 S	1054	1056.5	4	39.7	11.9		5
	10400	BERM	3	1054	1056	10	76			
	536	ONDR	45 C	1054.2	1056.7	5.5	31	4.3		
	4995	SGMR	3 S	1054.4	1055.8	6	116	34.8		5
	1415	SGMR	3 S	1054.4	1056	3	53 9	16.2		5
	127	TORN	45 C	1054.5	1056	13.5	406	26		
	200	GORK		1054.5	1058.3		770			
	234	POTS	41 F	1054.5	1055.6	3.5	525	80		
	8800	SGMR	3 S	1054.5	1056	5	88	26.4		5
	127	TORN		1054.5	1106.8		52			
	650	GORK	3 S	1054.5	1056.4	2.5	12			
	113	POTS	42 SER	1054.5	1056	16	1860	50		
	2950	GORK	3 S	1054.5	1056.1	3.4	160	50		
	127	TORN		1054.5	1100.5		206			
	650	GORK	29 PBI	1054.5	1057	10.4	2.5			
	200	GORK	46 C	1054.5	1056.2	8.5	850 D			
	100	GORK		1054.7	1056		1350			
	950	GORK	5 S	1054.7	1056.1	2.8	10	5		
	100	GORK	46 C	1054 7	1055 D	10	100 D			
	100	GORK		1054.7	1102		1320			
	2650	DWIN	3 S	1054	1057	4	40	20		
	606	SGMR	3 S	1055	1056.1	2.4	14	4.2		5
	9500	BERL	3 S	1055	1056.1	5	69			
	9100	GORK	3 S	1055	1056.2	2.4	93			
	3000	BERL	3 S	1055	1056.2	3.5	56			
	9100	GORK	29 PBI	1055	1057.4	14.4	25	13		
	9100	ARCE	3 S	1055.5	1056.4	6.5				
	29	UPIC	2 S/F	1055.5	1056.1	1 1				
	33	UPIC	4 S/F	1055.7	1056	1.6				
	1470	BERL	3 S	1055	1056.3	2.5	42			
	930	BORD	45 C	1055	1056.2	2 4	25	4		
	10715	DWIN	3 S	1055	1057	5	60	30		
	930	BORD	41 F	1332	1334	2.4	78	2		
	808	ONDR	3 S	1334	1334	.3	35			
	113	POTS	4 S/F	1439.4	1439.5	.6	300	35		
	2800	OTTA	2 S/F	1538.5	1539.7	4	2.8			
	228	HARS	45 C	1538.8	1541	4	125	25		
	228	HARS		1556	1558.5		360			
	228	HARS	45 C	1556	1557	4	300	50		
	7000	SAOP	45 C	1556.6	1557.3	5.8	7			10R
	930	BORD	8 S	1557.2	1557.2	.1	23	1		
	2800	OTTA	1 S	1557	1557.5	1.2	2	1.3		
	228	HARS	45 C	1702.5	1702.5	8	300	100		
	2800	OTTA	1 S	1703	1703.6	1	4	2		
	2695	BOUL	3 S	1708.5E	1709.5	2 D	10	3		
	228	HARS	45 C	1806.7	1807.5	2	175	25		
	7000	SAOP	4 S/F	1808	1808 5	1.4	12			10R
	2800	OTTA	1 S	1808	1808.5	2.5	9.2	2.4		
	228	HARS	45 C	1812.3	1612.5	4	175	7.5		
	2800	OTTA	8 S	1923.2	1923.5	.8	1.6	.8		
	2800	OTTA	1 S	2049.3	2049.5	1.5	1.8	.9		
	2800	OTTA	8 S	2207.2	2207.2	.1	2.8			
	2800	OTTA	1 S	2247	2250	9	2.4	1.4		
	100	HIRA	42 SER	2248	2256	5	2000	100		WL
	200	HIRA	42 SER	2249	2250.5	3.5	4000	100		0
	500	HIRA	46 C	2250.7	2251.4	2	20	10		ML
	2695	PENT	20 GRF	2330	2450	120	3.6	2		
	100	HIRA	46 C	2341	2341.5	1.2	200	30		0
	200	HIRA	46 C	2341	2341	1	220	80		WL
	500	HIRA	6 S	2341	2341.7	1	12	8		WL
20	700	SYDN	40 F	0016.5	0017.3	1.7				
	200	HIRA	42 SER	0144	0146	3.5	400	100		0
	500	HIRA	41 F	0145	0146.9	3.6	65	15		WL
	100	HIRA	42 SER	0145	0145.5	4	900	300		WL
	700	SYDN	40 F	0145.2	0149.1	4				
	1400	SYDN	40 F	0145.3	0146.2	3.3				
	700	SYDN	40 F	0400.2	0402.2	4.4				

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
20	228	HARS	45 C	0400.5	0401	3	500	50		
	200	HIRA	46 C	0400.5	0401	3	1000	300		WL
	500	HIRA	46 C	0401.3	0402.2	2	25	10		WL
	100	HIRA	46 C	0401.5	0401.9	2.5	3500	1000		WL
	200	GORK	43 NS	0530		169		5		
	260	ONDR	44 NS	0550 E		500 D	148	3		
	228	HARS	45 C	0536.2	0536.7	1.5	350	60		
	200	GORK	4 SF	0536.2	0538	2.5	50 D			
	2950	GORK	5 S	0537	0537.9	2.3	40	20		
	650	GORK	1 S	0537	0538.4	3.8	16			
	9100	GORK	1 S	0537.3	0537.9	2.5	8.5	4		
	100	GORK	4 SF	0537.3	0537.9	1.2	160			
	950	GORK	1 S	0537.7	0538.4	.9	6	3		
	9100	ARCE	8 S	0711.6	0711.9	.7				
	9100	ARCE	8 S	0714.1	0714.1	.7				
	113	POTS	41 F	0811.5	0811.5	.9	200	5		
	228	HARS	45 C	0932.7	0936.5	6	500	25		
	200	GORK		0933	0938.7		50 D			
	200	GORK	46 C	0933	0937.2	11	50 D			
	100	GORK		0934.6	0937.2		120 D			
	100	GORK	41 F	0934.6	0935	3.7	115			
	29	UPIC	45 C	0936.8	0937.9	1.4				
	930	BORD	41 F	0936.8	0936.8	.8	134	2		
	33	UPIC	45 C	0937	0937.5	1.9				
	930	BORD	45 C	0949	0949.1	.3	40	2		
	234	POTS	41 F	1034.2	1037	3.3	1100	6		
	113	POTS	42 SER	1034.5	1037.2	3	140	8		
	127	TORN	41 F	1036.2	1037.2	11.5	149			
	930	BORD	45 C	1107.7	1108	.3	28	2		
	226	HARS	45 C	1119	1118.5	2	100	25		
	127	TORN	7 C	1119	1120.4	1.7	66			
	200	GORK	4 SF	1119.3	1119.8	1.2	60 D			
	113	POTS	41 F	1119.6	1120.6	1	100	3		
	100	GORK	46 C	1119.6	1119.7	1.6	140			
	100	GORK		1119.6	1120.5		140			
	2800	OTTA	20 GRF	1200	1300	185	6	3.6		
	8800	SGMR	3 S	1209.3	1209.4	.3	23.5	7.1		
	1470	BERL	4 S/F	1210	1212.5	4.3	6.9			
	1415	SGMR	1 S	1210.2	1212.6	7.1	6.1	1.8		
	4995	SGMR	1 S	1210.8	1212.4	5.7	3	0.8		
	234	POTS	4 S/F	1215.5	1215.6	.2	175	35		
	113	POTS	8 S	1215.5	1215.6	.6	30000	70		
	100	GORK	8 S	1253.3	1256	1.5	120 D			
	228	HARS	45 C	1253.5	1254.2	3	500	25		
	930	BORD	8 S	1438.6	1438.7	.2	44	1		
	930	BORD	45 C	1549	1549.5	.5	41	2		
	2800	OTTA	20 GRF	1615	1650	50	1.6	.8		
	7000	SAOP	1 S	1713.8	1714.2		6			0
	930	BORD	41 F	1756	1758.8	.7	100	3		
	7000	SAOP	45 C	1917.8	1944.8	39.8	24			0
	2800	OTTA	27A RF	1920		260	2	1.9		
	2800	OTTA	24 R	1920	1930	10	2	1		
	9400	HUAN	S	1929.6	1944.6	34.9	11.6	2.6		L
	2800	OTTA	24P R	1930		235	2			
	4995	BOUL	45 C	1941.5E	1943.5	8 D	19	6		
	4995	SGMR	3 S	1942.4	1946.8	5.8	16.1	4.8		
	1420	BOUL	46 C	1942.5E	1943	3.5D	87	29		
	2800	OTTA	4 S/F	1942.5	1944.7	6	34	11.8		
	1415	SGMR	3 S	1942.6	1943	7.6	116	34.8		
	8800	SGMR	3 S	1942.7	1946	5.6	7.4	2.2		
	2695	SGMR	3 S	1942.7	1945.4	8	34.8	10.4		
	2695	BOUL	46 C	1943 E	1946	3.5D	30	10		
	2695	BOUL	29 PBI	1946.5E	1946.5	2.5D	10	3		
	2800	OTTA	26 FAL	2325	2340	15	-2	-1		
21	200	GORK	43 NS	0341		376		5		
	260	ONDR	44 NS	0600 E		475 D	40			
	100	GORK	43 NS	0906		50		5		
	127	TORN	43 NS	0910	1059.4	317	13	1.3		V0
	200	HIRA	7 C	0430.2	0431	1	700	400		WL
	9100	GORK	1 S	0430.2	0431.1	2.1	12	6		
	228	HARS	45 C	0430.5	0430.7	1	500	150		
	100	HIRA	7 C	0430.5	0430.9	1	500	250		0
	500	HIRA	6 S	0430.5	0430.6	.5	125	35		0
	200	GORK	4 SF	0430.6	0431.2	1.3	55 D			
	650	GORK	2 SF	0430.6	0431	1.1	11	3.5		
	100	GORK	8 S	0430.8	0431.5D	1.5	120 D			
	930	BORD	41 F	1032	1032.1	.2	18	2		
	10400	BERK	3	1109	1110	2	16			
	2800	OTTA	1 S	1109.2	1110.2	2	2	1		
	3500	BERL	20 GRF	1109	1118	51	8			
	1470	BERL	20 GRF	1126	1137	63	1.9			
	9500	BERL	3 S	1201.7	1202.4	2.3	18			
	9400	HUAN	S	1201.8	1202.3	1.6	22.6	8.7		0
	7000	SAOP	3 S	1202	1202.4	1	21			0

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
	10400	BERN	3		1202	1202.5	1	26			
	9100	ARCE	3	S	1202.1	1202.4	1 6				
	10715	DWIN	1	S	1202	1202 5	1	20	10		
	2800	OTTA	21	GRF	1305	1357	265	8,2	4.1		
	9400	HUAN		S	1335.4	1354.8	90.2	21	7.4		R
	7000	SAOP	45	C	1341	1351.2	19	33			U
	127	TORN	45	C	1342	1342.4	3	266	31 5		
	2695	SGMR	20	GRF	1342.1	1351.2	27.9	9	3.6		SWF
	29	UPIC	2	S/F	1342.1	1342.5	.9				
	113	POTS	4	S/F	1342.3	1342.7	1.1	300	7		
	8800	SGMR	3	S	1342.5	1350.5	27.5	33	13.2		SWF
	2800	OTTA	2	S/F	1342.8	1344.7	3	3.4	1.5		
	33	UPIC	4	S/F	1342	1342	1,8				
	10400	BERN	3		1343	1351	90 U	35			
	9100	ARCE	20	GRF	1343.3	1351.3	34				
	29	UPIC	3	S	1344.7	1344,8	.5				
	33	UPIC	8	S	1344.7	1344.7	.5				
	9500	BERL	3	S	1347	1351.2	8	29			
	4995	SGMR	3	S	1347	1351	23	28.8	11.5		SWF
	10715	DWIN	1	S	1347	1352	7	25	15		
	3000	BERL	3	S	1348	1351	7	9.7			
	9400	HUAN		S	1350	1351.3	3.4	24.2	12.8		L
	1470	BERL	1	S	1350	1351.5	3	2.5			
	2800	OTTA	1	S	1350	1351.3	5	6.6	3		
	9400	HUAN		S	1819	1831,1	12.1	8.1	3.2		R
	2800	OTTA	240	R	1825	1945	80	3	1.5		
	2800	OTTA	1	S	2049	2051.2	5	2.6	1.3		
	2800	OTTA	240	R	2150	2240	50	3.2	1.6		
22	200	GORK	43	NS	0314		397		5		
	260	ONDR	44	NS	0555 E		486 D	24			
	29	UPIC	45	C	0542.6	0543.8	1.5				
	33	UPIC	45	C	0542.6	0543.6	1.5				
	100	GORK	41	F	0542.8	0543	3.8	170			
	100	GORK			0542.8	0545.8		170			
	100	GORK			0542.8	0543.6		170			
	200	GORK	4	SF	0543.4	0544	1.1	55 D			
	29	UPIC	3	S	0545.4	0545.6	.7				
	33	UPIC	3	S	0545.4	0545.4	.4				
	650	GORK	2	SF	0545.7	0546	.5	15	5.5		
	536	ONDR	42	SER	0611.6	0712.5	80	14			
	2800	OTTA	240	R	1230	1300	30	2.8	1.4		
	9400	HUAN		S	1306.3	1335.3	57.8	9.4	4.5		L
	10400	BERN	20		1310.5	1317.6	19	13			
	9400	HUAN		S	1316.7	1317.7	1.9	11	8.4		L
	7000	SAOP	3	S	1317	1317.9	5.2	11			10L
	9400	HUAN		S	1436	1436.9	2.4	7.8	4.4		0
	7000	SAOP	1	F	1436.4	1437	1·2	9			12L
	2800	OTTA	1	S	1436	1437	2	3.6	1.7		
	7000	SAOP	20	GRF	1629.4			6			0
	4995	SGMR	1	S	1738.1	1739.3	5.1	4.2	1.2		SWF
	9400	HUAN		S	1738 7	1758.4	31.1	6.3	4.1		L
	7000	SAOP	2	S/F	1739	1739.5	2.6	9			18L
	8800	SGMR	1	S	1739.3	1739.9	3.8	7.2	2.1		SWF
	9400	HUAN		S	1922.3	1936.2	72.7	9,4	6.1		L
	9400	HUAN		S	1945.3	1945.8	1.3	4.7	4.3		0
	9400	HUAN		S	2001.5	2002	1.4	7.8	5.1		L
	9400	HUAN		S	2113,2	2138.3	41.1	37.6	21.6		L
	2800	OTTA	21	GRF	2120	2345	270 D	13.6			
	2800	OTTA	1	S	2130.8	2131,5	1.2	3.6	1.7		
	2800	OTTA	1	S	2216	2218	5	5.2	1.8		
	2695	PENT	4	S/F	2332.7	2333.2	1.3	16.4	8.2		
	2695	BOUL	3	S	2333.5E	2334.5	2.5D	10	3		
	200	HIRA	46	C	2334	2335	2.5	8000	1500		0
	100	HIRA	46	C	2334.5	2335.5	2	900	500		WL
23	1400	SYDN	1	S	0215.9	0216.8	1.2				
	700	SYDN	1	S	0216,1	0216.8	1.1				
	200	GORK	43	NS	0316 E		371		5		
	260	ONDR	44	NS	0550 E		500 D	37	2		
	9100	GORK	20	GRF	0756.6	0801.2	249	12	4		
	3000	BERL	20	GRF	0756	0821	84	7.5			
	9500	BERL	20	GRF	0757	0821	83	9.2			
	113	POTS	4	S/F	0934.3	0934.5	3.4	200	15		
	100	GORK			0934.5	0935.4		250 D			
	100	GORK	46	C	0934.5	0934.8	5.7	250 D			
	100	GORK			0934.5	0936.4		250			
	2800	OTTA	20	GRF	1225	1445	240	3.4	1.7		
	7000	SAOP	20	GRF	1435,6			6			0
	2800	OTTA	21	GRF	1635	1655	55	4.4	2.2		
	4995	BOUL	4	SF	1644 U	1647.5	7 U	19	6		
	9100	ARCE	20	GRF	1645.1	1650.1	39				
	10400	BERN	20		1645.3	1648.5	17.1	12			
	1415	SGMR	3	S	1645.7	1648.3	5	41	12		
	7000	SAOP	45	C	1645.8	1648.4	12	18			26R

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	4995	SGMR	3	S	1646	1648.3	7 2	22	6.6		
	1420	BOUL	3	S	1646.5E	1648.5	2.5D	28	9		
	8800	SGMR	3	S	1646.8	1649	7 3	15	4.5		
	606	SGMR	3	S	1646.8	1650	5.3	450	130		
	930	BORD	45	C	1646	1648.2	6	93	22		
	2800	OTTA	4	S/F	1646	1648.5	6	19.2	8		
	2615	SGMR	3	S	1647.1	1648.8	4.1	10	5.4		
	2695	BOUL	45	C	1647 E	1649	6 D	26	9		
	1420	BOUL	29	PBI	1649 E	1649 U	3.5D	12	4		
	2800	OTTA	20	GRF	1845	1910	55	1.8	.9		
	2800	OTTA	32	ABS	2035	2050	25	-2.4	-1.2		
	2800	OTTA	24	R	2115	2120	5	2.8	1.4		
	2800	OTTA	27	RF	2115		105	2.8	2.1		
	2800	OTTA	24P	R	2120		55	2.8			
	2800	OTTA	26	FAL	2215	2300	45	-2.8	-1.4		
24	35000	NAGO	23	GRF	0152	0238	54	16			
	200	GORK	44	NS	0309 E		591		15		
	260	ONDR	44	NS	0542 E		510 D	40	10		
	127	TORN	44	NS	0630 E	0745.6	450 D	92	3		
											V1
	9100	GORK	20	GRF	0508	0517.3	15	6	2.5		
	2950	GORK	1	S	0616.2	0616.8	.8	8.4	4.2		
	9100	GORK	1	S	0616.5	0616.7	.5	4	2		
	9100	ARCE	21	GRF	0718.3	0818.2	197				
	10400	BERN	20		0727	0816.3	110	37			
	9100	ARCE	3	S	0727.9	0730.1	4				
	2950	GORK	1	S	0728	0730	4	12	6		
	9500	BERL	3	S	0728	0730	3	17			
	3000	BERL	3	S	0728	0729.9	2.5	9.9			
	9100	GORK	1	S	0728.4	0730	3	15	7.5		
	100	GORK	4	SF	0744	0745.9	3.9	300			
	33	UPIC	42	SER	0744.1	0745.9	4.3				
	29	UPIC	42	SER	0744.5	0746	5.1				
	500	HIRA	27	RF	0750.8	0820.8	51	10	4		ML
	9100	GORK	20	GRF	0751.8	0815	119	24	10		
	9500	BERL	20	GRF	0755	0818	120	20			
	1470	BERL	20	GRF	0755	0816.3	35	7.6			
	3000	BERL	20	GRF	0755	0830	120	15			
	650	GORK	20	GRF	0757.9	0816.5	93	10	5		
	536	ONDR	23	GRF	0801.3	0808.2	59	18	7.7		
	950	GORK	1	S	0815.4	0816 4	4.1	3.5	1.5		
	200	GORK	4	SF	0844.3	0844.9	3.1	60 D			
	650	GORK	4	SF	0858.7	0859.2	1.3	16	4		
	100	GORK	41	F	0934.7	0937.3	9	245			
	100	GORK			0934.7	0942.2		210			
	536	ONDR	3	S	1022	1022	.2	22			
	2800	OTTA	20	GRF	1100 E	1120	110 D	5.8			
	1470	BERL	20	GRF	1110	1116.5	45	3.2			
	3000	BERL	20	GRF	1113	1117	27 U	4.6			
	650	GORK	1	S	1123.6	1123.8	.6	3	1.5		
	9400	HUAN		S	1301.2	1415.5	121.8	7.8	3.2		0
	234	POTS	8	S	1422.4	1422.8	.2	175	60		
	2800	OTTA	21	GRF	1505	1515	115	5.8	2.4		
	2800	OTTA	1	S	1509.5	1510	1 5	3.8	1.9		
	2800	OTTA	20	GRF	1610	1615	30	2.8	1 4		
	2695	BOUL	46	C	1648 E	1649	2 D	33	11		
	2800	OTTA	20	GRF	1820	1925	150	2.8	1.4		
	2695	PENT	27	RF	2210		180	3.4	2.8		
	2695	PENT	24	R	2210	2227	17	3.4	1.1		
	2695	PENT	24P	R	2227		118	3.4			
	2695	PENT	26	FAL	2425	2510	45	-3.4	-1.7		
25	200	GORK	43	NS	0338		496		5		
	260	ONDR	44	NS	0602 E		491 D	14			
	650	GORK	1	S	0415.3	0416.4	2.3	4	2		
	29	UPIC	2	S/F	0714.8	0715.5	1.4				
	33	UPIC	2	S/F	0714.9	0715.3	.9				
	33	UPIC	2	S/F	1005.8	1006.2	.6				
	29	UPIC	2	S/F	1005.9	1006.2	1				
	2800	OTTA	20	GRF	1110	1230	235	8	4		
	4995	BOUL	4	SF	1429	1430.5	3.5	16	5		
	7000	SAOP	4	S/F	1430	1431.5	2	35			BR
	9400	HUAN		S	1430.5	1431.6	2.5	18.9	8.2		R
	10400	BERN	3		1430.6	1431.5	2.5	17			
	9100	ARCE	3	S	1430.7	1431.7	2 8				
	4995	SGMR	3	S	1430.8	1430.8	2.4	20.4	6.1		
	8800	SGMR	3	S	1430.8	1431.3	2.5	24.5	7.4		
	9500	BERL	3	S	1430.9	1431.5	1.6	17			
	2800	OTTA	24O	R	1600	1620	20	3	1.5		
	9400	HUAN		S	1723.8	1725.3	6.8	6.6	3.5		L
	2800	OTTA	20	GRF	1800	1840	95	3 4	1.7		
	2800	OTTA	24O	R	2035	2050	15	3.6			
	1420	BOUL	45	C	2058.5E	2059.5	2.5D	11	4		
26	200	GORK	44	NS	0257		490		5		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	260	ONDR	44	NS	0547 E		517 D	104	7		
	536	ONDR	43	NS	1040		224 D	18	8		
	650	GORK	20	GRF	0719	0805 U	60	5	2.5		
	650	GORK	20	GRF	0848	0902	24	5	2 5		
	3000	BERL	20	GRF	0920	0942	58	8.7			
	9500	BERL	20	GRF	0923	0951.5	60	16			
	1470	BERL	22	GRF	0924	0925.8	54	7.3			
	200	GORK	4	SF	0925.6	0926.7	1.4	60 D			
	9100	GORK	20	GRF	0926.5	0943.2	71	16.5	6.5		
	127	TORN	7	C	1001.5	1002.4	1.7	17	11		
	930	BORD	41	F	1025.6	1025.9	.4	15	2		
	33	UPIC	48	C	1040.6	1042.2	11,2				
	100	GORK			1041.5	1048.1		215			
	100	GORK	46	C	1041.5	1042.1	10	70			
	200	GORK	4	SF	1041.6	1050.3	11	60			
	29	UPIC	48	C	1041.7	1042.6	10.4				
	650	GORK	22	GRF	1054 U	1146.6	126	15			
	950	GORK	2	SF	1134.3	1135	4.8	3			
	228	HARS	48	C	1413.8	1414	1.5	320 D	90		
	2800	OTTA	20	GRF	1435	1455	65	2.2	1.1		
	2800	OTTA	26	FAL	1625	1705	40	-2 8	-1.4		
	2800	OTTA	20	GRF	1845	1900	45	2.2	1.1		
	2800	OTTA	20	GRF	2100	2130	80	2.8	1.6		
	4995	BOUL	4	SF	2235	2236	4	11	4		
	2800	OTTA	1	S	2236	2237	2	1.4	.7		
27	2695	PENT	1	S	0036	0037	3	4	1.3		
	200	GORK	44	NS	0259 E		601		5		
	260	ONDR	44	NS	0544 E		509 D	29			
	127	TORN	44	NS	0726 E	0153	450 D	88	3		V1
	29	UPIC	4	S/F	0851.9	0852.2	.9				
	33	UPIC	4	S/F	0852	0852.2	.9				
	2950	GORK	3	S	0854.6	0856.3	5.3	21	10		
	9100	GORK	20	GRF	0908	1008.1	128	9			
	9100	ARCE	1	S	1040.8	1040.9	.6				
	950	GORK	2	SF	1051.7	1054.7	6.5	5	2.5		
	29	UPIC	45	C	1102.2	1103.4	2.7				
	33	UPIC	45	C	1102	1103.8	2.4				
	7000	SAOP	40	F	1123						
	2800	OTTA	21	GRF	1145	1340	215	8	5.6		
	200	GORK	46	C	1151.2	1151.6	4.5	15			
	200	GORK			1151.2	1153.6		20			
	7000	SAOP	45	C	1153	1155	7	48			11R
	650	GORK	20	GRF	1153.3	1159	9.7	6.6			
	3000	BERL	4	S/F	1154	1155	5.5	26			
	9400	HUAN		S	1154	1155	2	13	8 5		0
	4995	SGMR	3	S	1154	1155	8	47.2	14.2		SWF
	10400	BERN	4		1154	1155.1	5.4	15			
	9100	ARCE	40	F	1154.1	1155.1	8				
	9100	GORK	41	F	1154.2	1155	5.2	20			
	9100	GORK			1154.2	1158		8			
	9500	BERL	4	S/F	1154.3	1155	4.7	14			
	1470	BERL	4	S/F	1154.4	1155.1	5.6	9.7			
	2695	SGMR	45	C	1154.6	1155.5	7.2	18.3	10.5		SWF
	8800	SGMR	3	S	1154.6	1155	5.4	14.3	4.3		SWF
	2695	SGMR	45	C	1154.6	1158.3		18.3			SWF
	1415	SGMR	1	S	1154.7	1155	7.2	6.2	1.9		SWF
	2800	OTTA	45	C	1154	1155	9	22.8	7.6		
	2650	DWIN	7	C	1154	1155	6	25	10		
	2950	GORK			1155.2	1158		33			
	2950	GORK	45	C	1155.2	1155.2	6	47			
	9400	HUAN		S	1157.3	1158	1.5	9.8	2.4		0
	29	UPIC	42	SER	1238.1	1247.8	12				
	33	UPIC	42	SER	1236.4	1249.2	12.4				
	2800	OTTA	20	GRF	1605	1700	80	2.6	1.3		
	7000	SAOP	40	F	1700						
	2800	OTTA	20	GRF	1705	1820	55	2 6	1.3		
28	260	ONDR	44	NS	0532 E		512 D	30			
	127	TORN	43	NS	0843	0855	193	216	.5		V1
	200	GORK	43	NS	0900		60		5		
	2800	OTTA	20	GRF	1125	1140	55	1.8	.9		
	2800	OTTA	2	S/F	1343,5	1345	10	2 8	1.4		
	2800	OTTA	21	GRF	1452	1505	125	5.8	4.4		
	2800	OTTA	1	S	1554.5	1556	3	6.2	3		
	2695	BOUL	3	S	1556 E	1557.5	3.5D	10	3		
	9400	HUAN		S	1705.3	1715	89.5	19	9.4		0
	2800	OTTA	21	GRF	1708	1714	115	4.4	2.2		
	10400	BERN	20		1709	1714.5	20	12			
	7000	SAOP	20	GRF	1709		22	13			0
	1420	BOUL	45	C	1709.5E	1710.5	2 D	8	3		
	1415	SGMR	3	S	1709.9	1710	1.6	11.4	3.4		SWF
	606	SGMR	3	S	1710.1	1710.9	1.2	21	6.2		SWF
	2695	PENT	4	S/F	1710.2	1710.4	1.5	10.2	3.4		
	2695	BOUL	27	RF	1710.5E	1711	6,5D	5	2		

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	930	BORD	41 F	1710	1711	1.7	23	5		
	2800	OTTA	1 S	1748	1751	8	2.8	1.4		
	2800	OTTA	20 GRF	2208	2223	37	6.4	3.2		
	4995	BOUL	4 SF	2357.5	2359	5	43	14		
	1415	MANI	S	2358.7	0000.2	3.3	1 9.6	3.2		
	2695	PENT	4 S/F	2358	2359.5	6	60	15		
	1420	BOUL	45 C	2358 E	2400	3 D	16	5		
	4995	MANI	S	2359	2359.8	4	3 35.9	11.9		
	2695	BOUL	46 C	2359 E	2405	3.5D	42	14		
29	1420	BOUL	29 PBI	0001 E	0001	1.5D	4	1		
	2695	BOUL	29 PBI	0002.5E	0002.5	2.5D	5	2		
	1415	MANI	S	0047	0048.7	4	3 98.9	33		
	500	HIRA	46 C	0324.1	0325.6	8	130	60		WRWL
	950	GORK	46 C	0324.3	0327	24.5	260			
	950	GORK		0324.3	0329.4		126			
	650	GORK	23 GRF	0324.4	0339.5	131.6	19	4.5		
	650	GORK		0324.4	0327.1		57			
	650	GORK	45 C	0324.4	0325.5D	6	60 D			
	1415	MANI	S/F	0324.5	0325.3	7.6	4 57.6	19.2		
	2950	GORK	45 C	0328 1	0329.2	5	14			
	2950	GORK		0328.1	0331.8		20			
	200	HIRA	46 C	0329	0330	2	200	100		0
	200	GORK	46 C	0329	0330	23	650			
	200	GORK		0329	0340		60			
	100	HIRA	46 C	0329.5	0333.5	7	400	100		0
	100	GORK		0329.7	0333		220			
	100	GORK	46 C	0329.7	0330.4	50	280			
	100	GORK		0329.7	0349		60 D			
	100	GORK		0329.7	0333.7		250			
	500	HIRA	29 PBI	0334.3	0334.3	90	10	6		WL
	9100	GORK	1 S	0345.6E	0347.5	3 D	17.5			
	950	GORK	4 SF	0415	0416.1	2.4	102			
	650	GORK	45 C	0415	0416	2.1	43			
	650	GORK		0415	0416.6		100			
	2950	GORK	1 S	0415.4	0416.3	1.7	11	5.5		
	1415	MANI	S/F	0415.8	0416.4	2.2	4 19.2	6.4		
	9100	GORK	1 S	0415.9	0416.9	1.7	5.8			
	260	ONDR	44 NS	0556 E		234	20			
	127	TORN	42 SER	1035.2	1037.6	5.3	63			
	113	POTS	42 SER	1035.4	1038	4.7	200	2		
	260	ONDR	46 C	1035	1037.6	5	152	10		
	234	POTS	42 SER	1037.1	1038	3.1	175	10		
	2800	OTTA	1 S	1213.5	1214.6	3.5	2.8	1.4		
	260	ONDR	46 C	1216.4	1217.8	7	44	8		
	2800	OTTA	20 GRF	1505	1520	45	2.4	1.2		
	2800	OTTA	20 GRF	1718	1725	50	2.4	1.4		
	2800	OTTA	20 GRF	1840	1850	40	2 4	1.2		
30	500	HIRA	20 GRF	0224.5	0248	44	7	3		0
	200	HIRA	20 GRF	0228	0248.5	82	70	10		WR
	100	HIRA	20 GRF	0228	0245	80	950	100		WL
	1400	SYDN	45 C	0232.8	0234.3	1.7				
	17000	NOBE	20 GRF	0233	0325.5	165	23			0
	1400	SYDN	41 F	0242	0243.8	3.8				
	700	SYDN	2 S	0246.8	0248.6	2.4				
	1400	SYDN	2 S	0247	0247.9	1.5				
	200	GORK	46 C	0258.4	0300.1	10 D	10			
	100	GORK		0300.2E	0317.5		25			
	100	GORK	46 C	0300.2E	0301.2	53	20			
	100	GORK		0300.2E	0322.7		15			
	650	GORK	45 C	0315	0322.5	37	32			
	650	GORK		0315	0333.7		25			
	200	GORK	46 C	0315.1	0320.4	36.5	10			
	200	GORK		0315.1	0351.8		5			
	200	GORK		0315.1	0333.5		5			
	700	SYDN		0315.5	0334					
	700	SYDN	41 F	0315.5	0322	24.5				
	650	GORK	3 S	0701.2	0701.5	.7	50	25		
	260	ONDR	43 NS	0754		389 D	30	2		
	200	GORK	43 NS	0900		140		5		
	127	TORN	43 NS	0939	1028	66	43	1.5		V1
	9100	ARCE	20 GRF	0754.9	0908.6	167				
	650	GORK	21 GRF	0851	0912	42	3.3	1.6		
	1470	BERL	4 S/F	0852	0854.5	4	19			
	930	BORD	45 C	0854.2	0854.4	.5	43	2		
	808	ONDR	3 S	0854.5	0854.5	.2	22			
	200	GORK	41 F	0854.7	0855.1	3	10			
	650	GORK	4 SF	0854.7	0855.2	1.1	6	3		
	200	GORK		0854.7	0855.9		5			
	536	ONDR	2 S/F	0854	0854.7	2.5	13	3.4		
	2650	DWIN	8 S	0855			50			
	127	TORN	7 C	1100	1101	2	17	7.3		
	1415	SGMR	3 S	1418	1418.2	1	32.1	9.6		
	1415	SGMR	3 S	1437	1437.3	.5	15.8	4.7		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	7800	SAOP	46	F	1644						
31	260	ONDR	44	RS	0549 E		499 D	20			
	9100	ARCE	8	S	0852.3	0852.5	.6				
	9100	ARCE	40	F	0857.5	0900.6	7				
	2800	OTTA	21	GRF	1110	1155	90	3	1.5		
	2800	OTTA	1	S	1155.5	1156	2	2.8	1.4		
	4995	BOUL	4	SF	1800	1801	2	11	4		
	2800	OTTA	32	ABS	1855	1920	125	-3	-1.5		
	2800	OTTA	20	GRF	2205	2227	100	3.2	1.8		

Reports received from the following observatories:

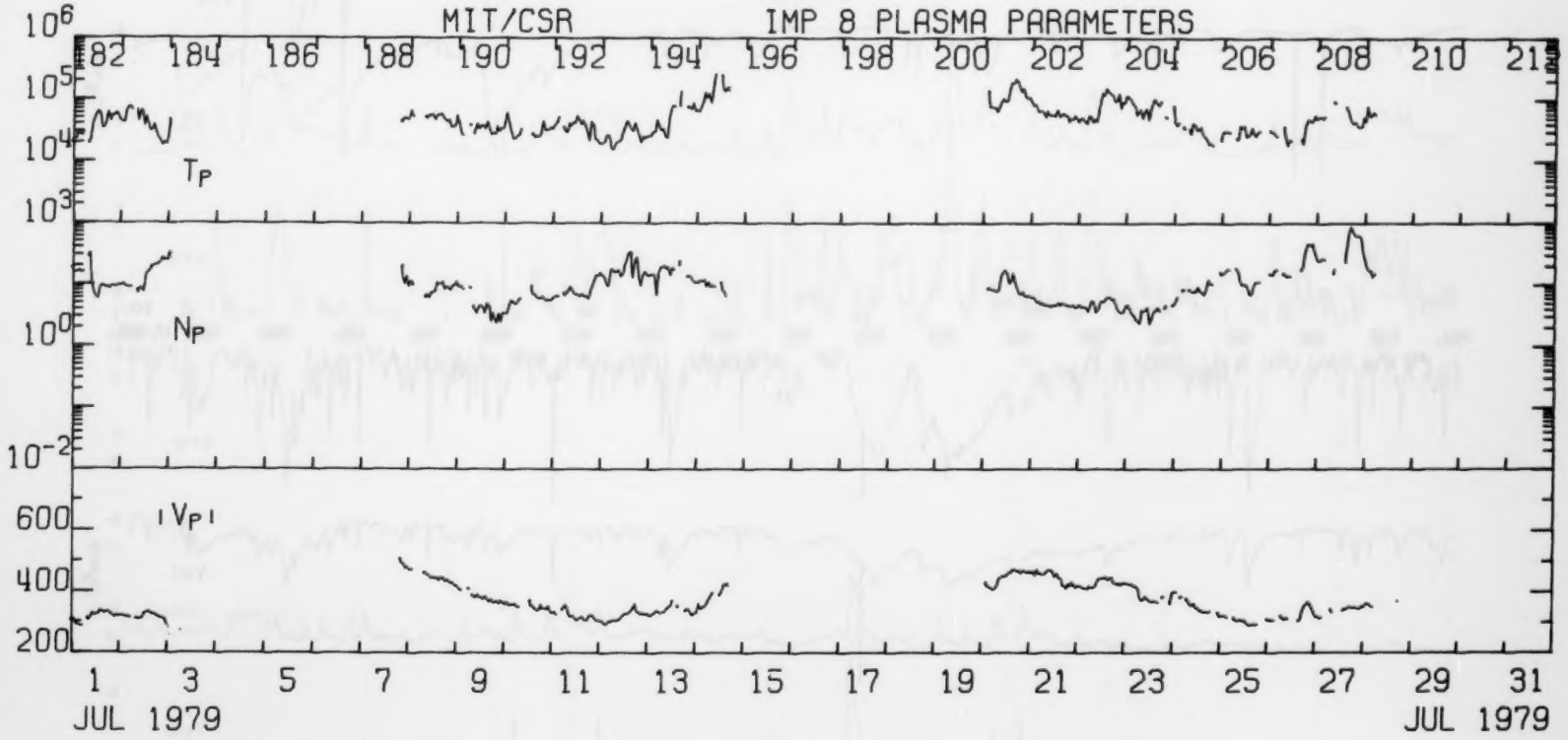
ARCE = Arcetri
BERL = Berlin-Adlershof
BERN = Berne
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 8 SOLAR WIND PLASMA

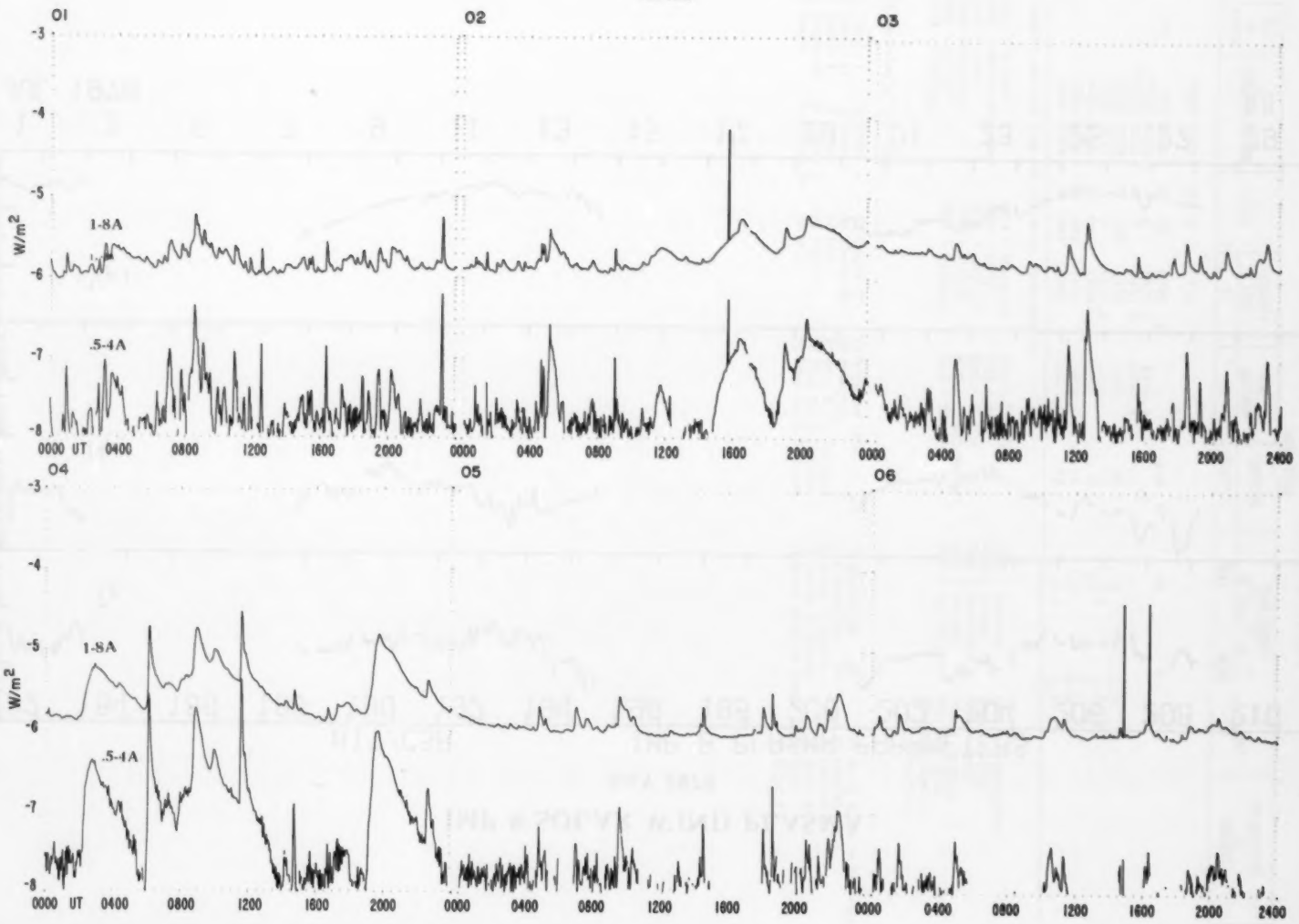
JULY 1979



19 Jul 79

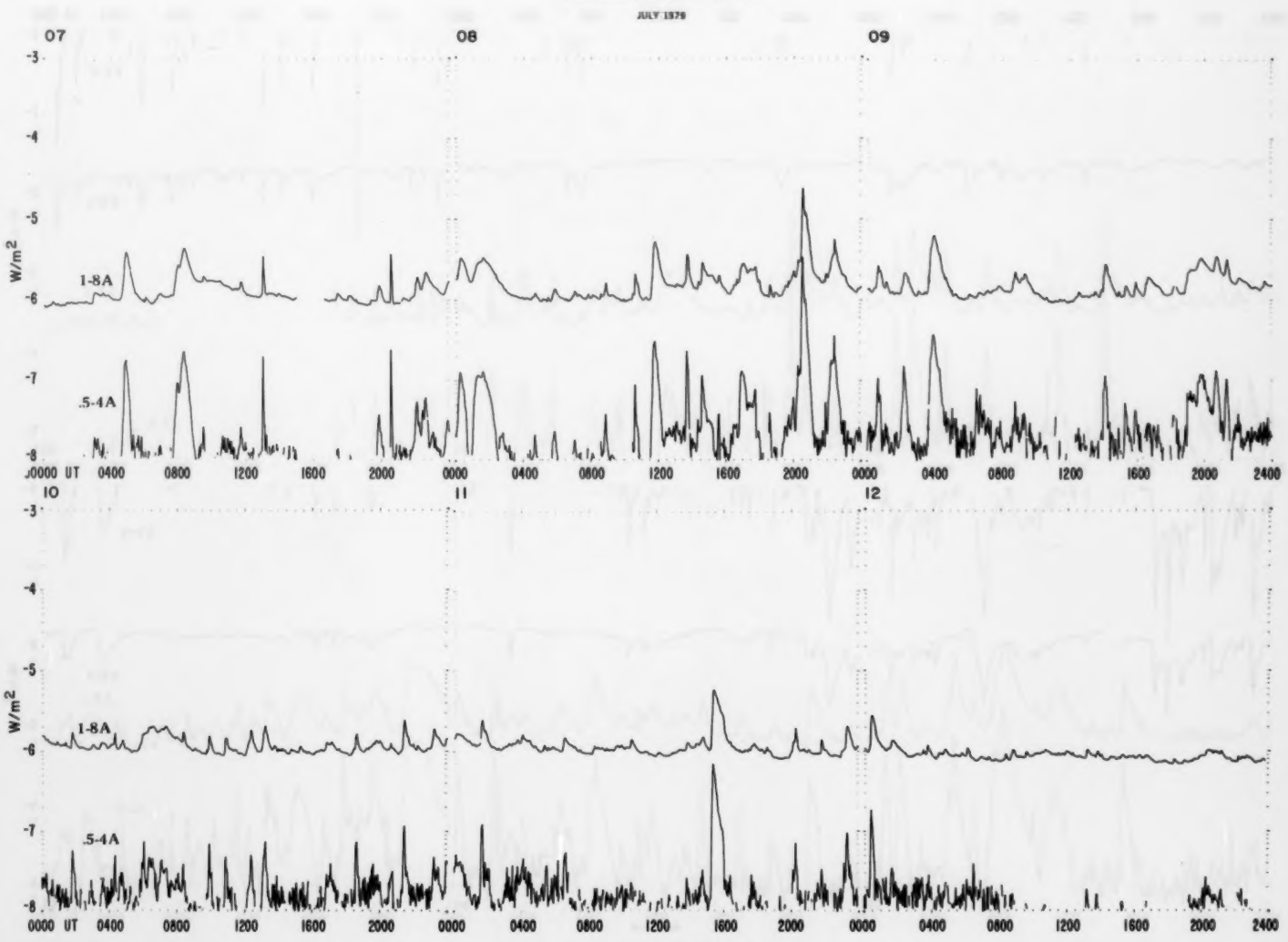
SMS-GOES X-RAYS

JULY 1979



SMS-GOES X-RAYS

JULY 1979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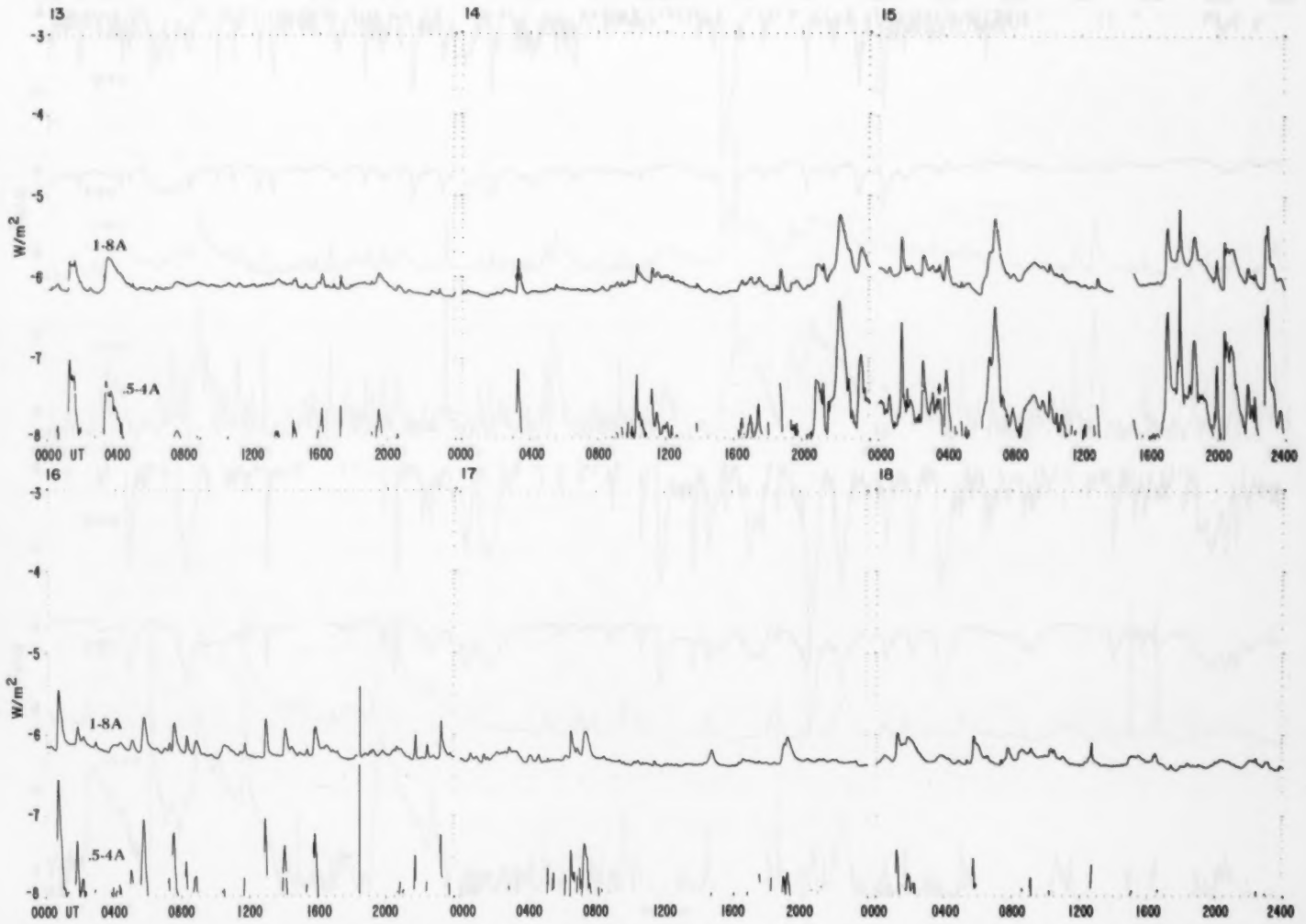
SMS-GOES X-RAYS

JULY 1979



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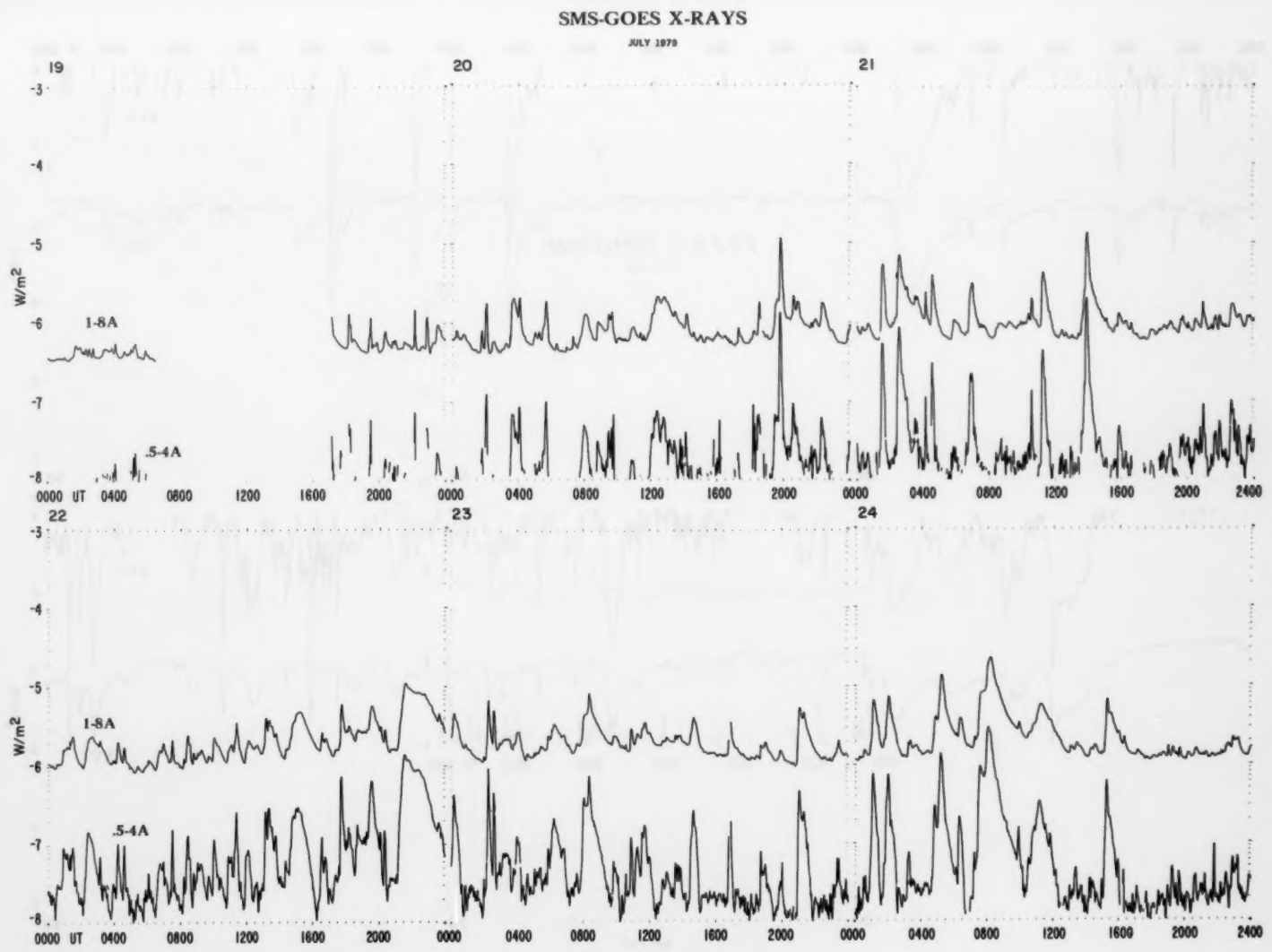
JULY 1979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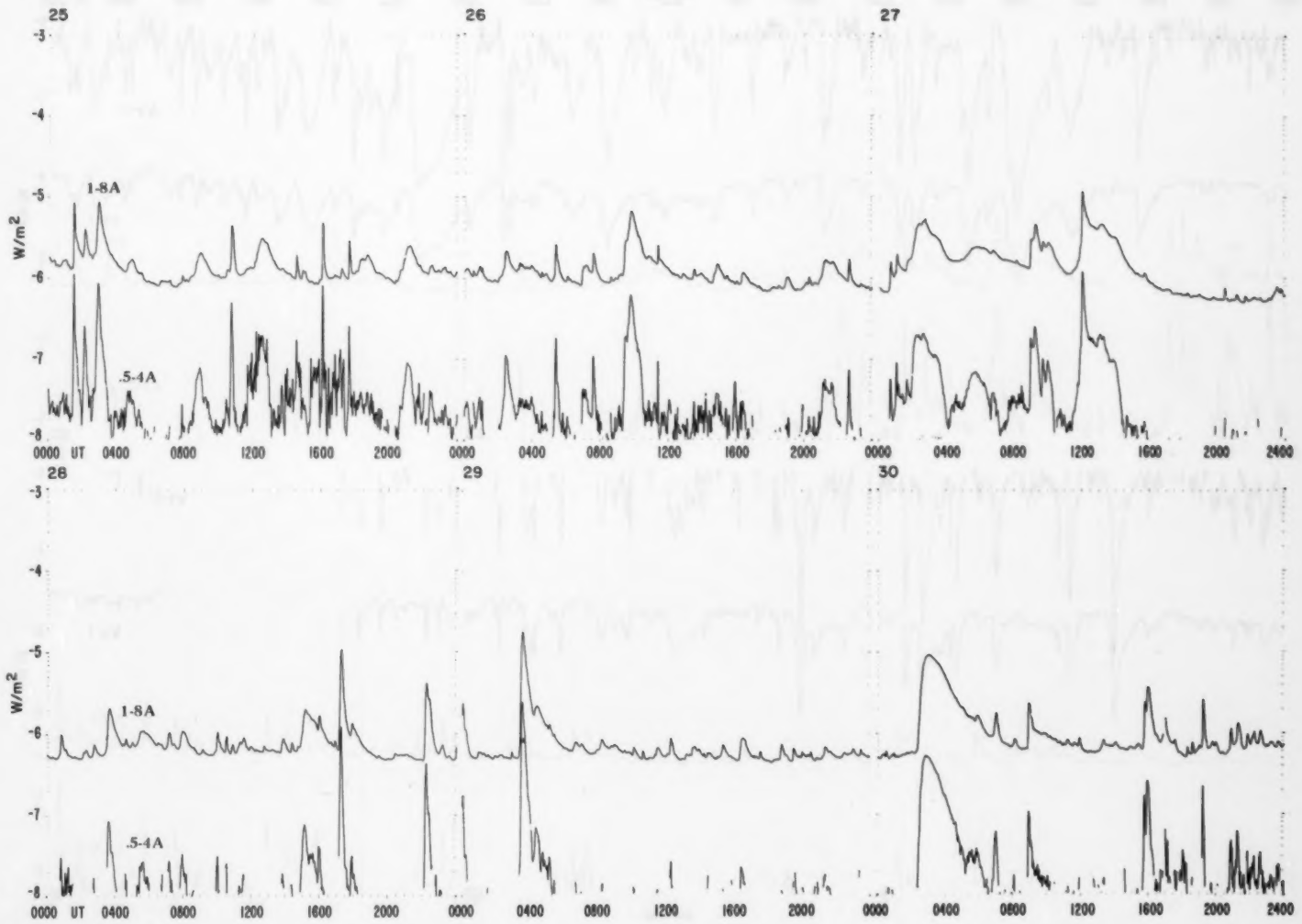
JULY 1979



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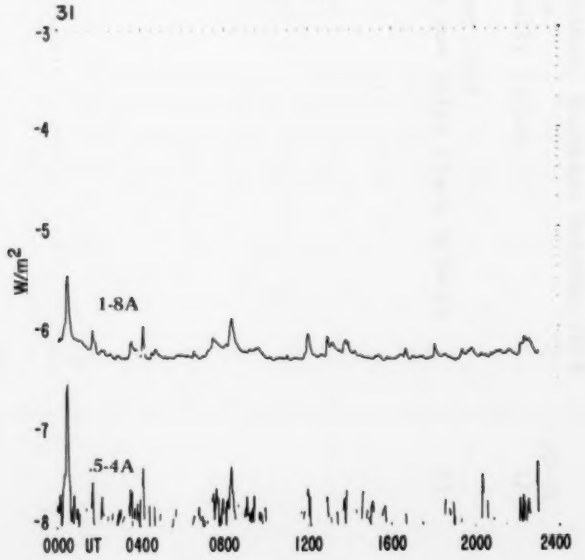
JULY 1979



SGD 425 Part II (Comprehensive)

MISCELLANEOUS DATA

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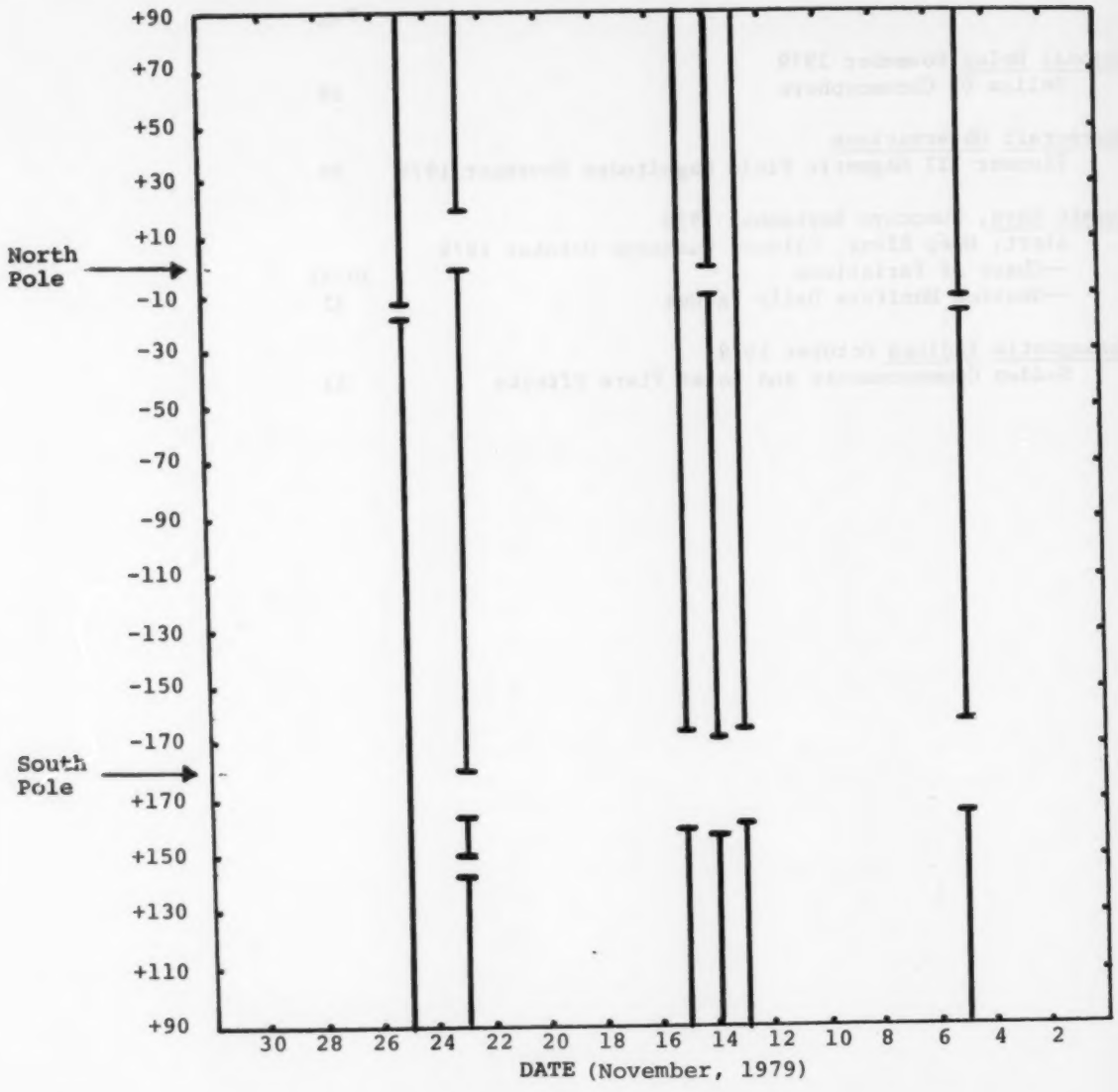
CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

NOVEMBER 1979

Big Bear Solar Observatory

OBSERVATIONS OF D3 CHROMOSPHERE AT SOLAR LIMB



PIONEER XII

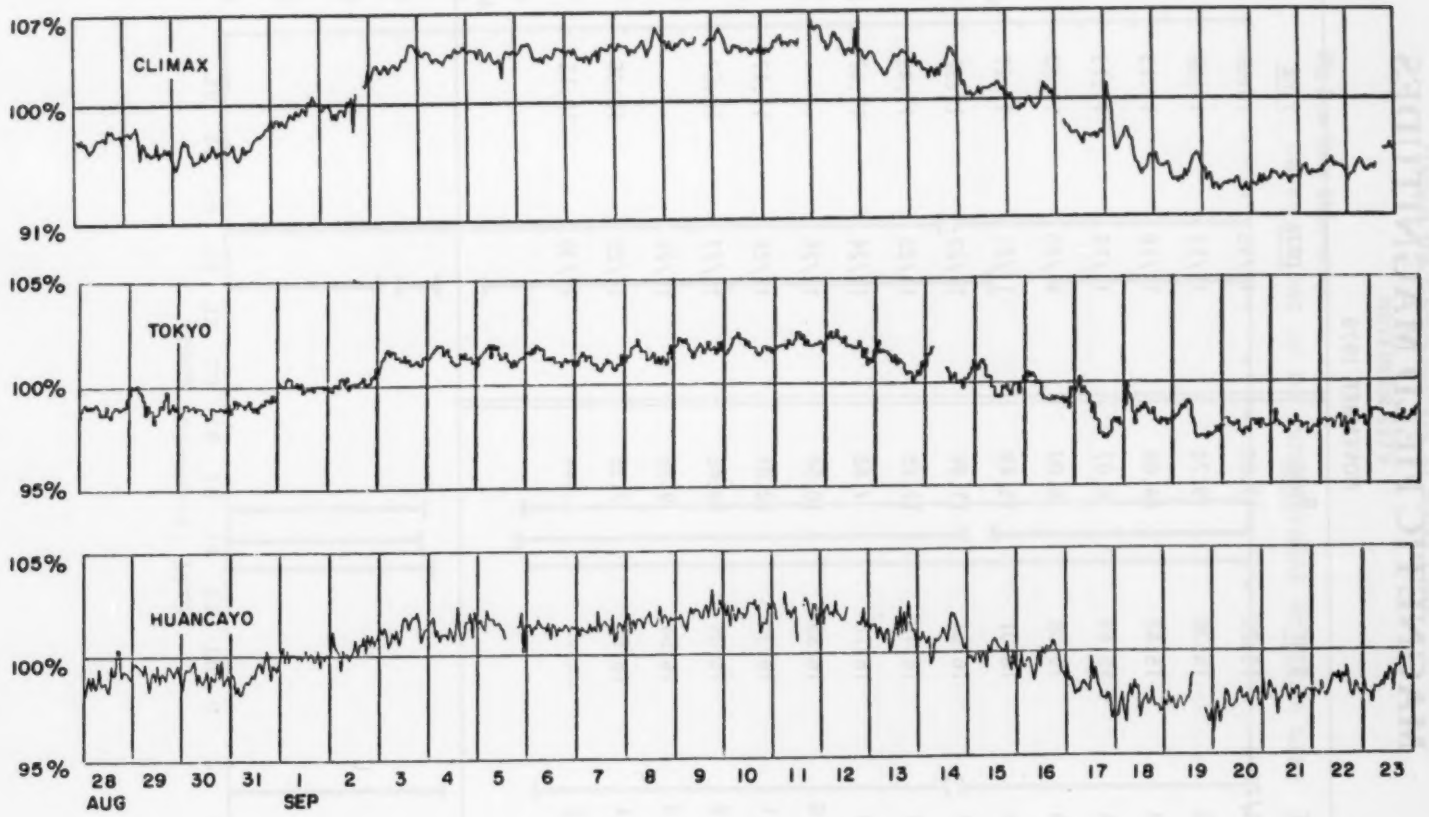
MAGNETIC FIELD MAGNITUDES

NOVEMBER 1979

DATE	TIME	B_{MAG}	DATE	TIME	B_{MAG}
11/1/79	15:29	17.53	11/16	16:59	7.66
11/2	15:30	9.70	11/17	17:06	27.40
11/3	15:42	24.68	11/18	17:13	7.01
11/4	15:49	5.07	11/19	17:15	6.68
11/5	15:58	6.00	11/20	17:20	12.42
11/6	16:01	15.49	11/21	17:27	9.88
11/7	16:07	11.96	11/22	17:32	11.18
11/8	16:12	12.85	11/23	17:40	13.34
11/9	16:18	7.60	11/24	17:42	9.52
11/10	16:55	10.54	11/25	-----	-----
11/11	16:31	12.81	11/26	17:47	13.24
11/12	16:35	10.45	11/27	18:57	6.59
11/13	16:54	9.25	11/28	-----	-----
11/14	16:52	7.33	11/29	18:05	8.15
11/15	-----	-----	11/30	18:12	7.82

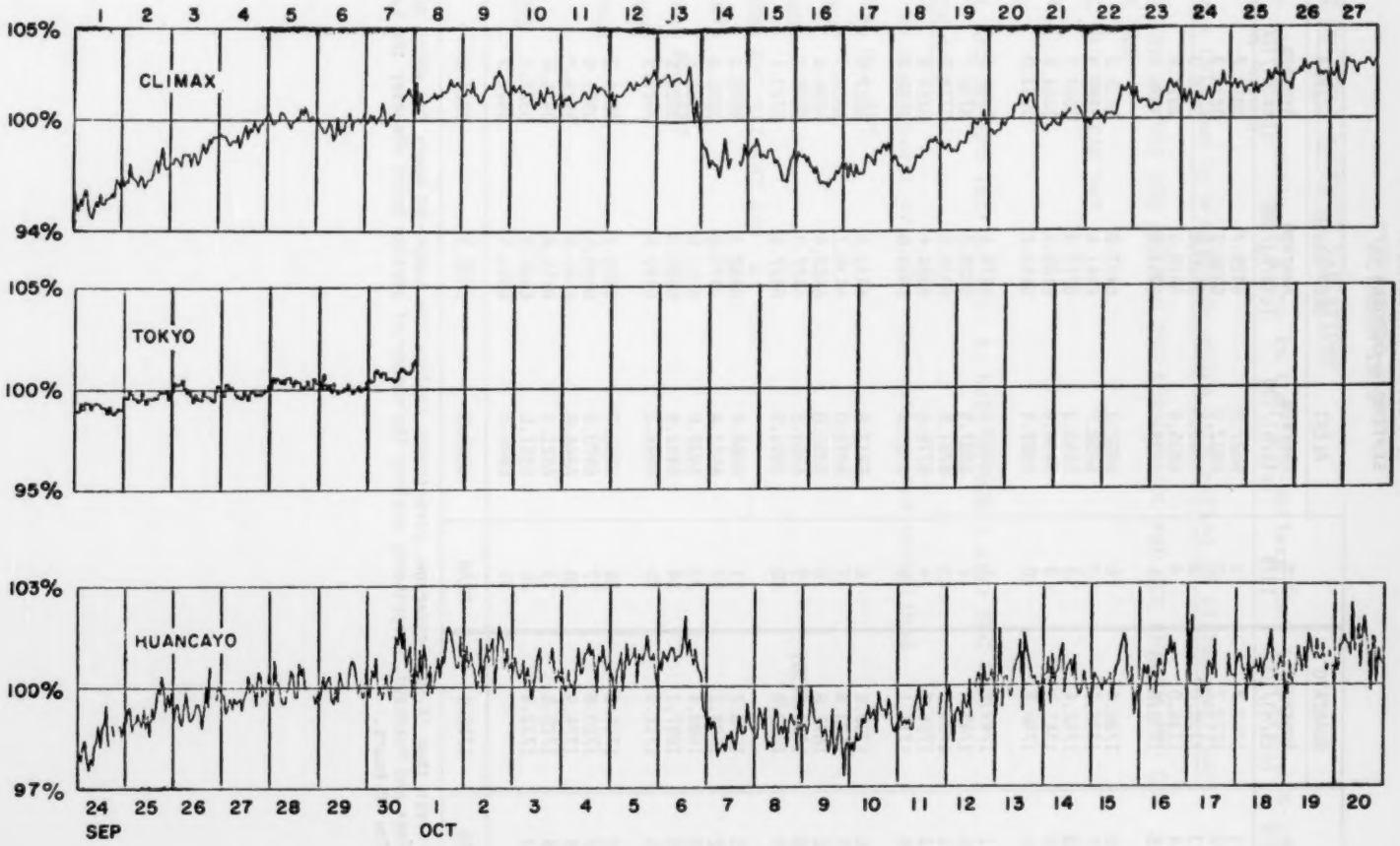
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1997 (August - September 1979)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1998 (September-October 1979)



COSMIC RAY INDICES
(Neutron Monitors)
SEPTEMBER-OCTOBER 1979

Sep. 1979	HUANCAYO Average (cts/h)/100	Oct. 1979	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	1713.7	1	6827.3	6429.7	3822.2	1737.2
2	1720.7	2	6812.9	6436.2	3830.9	1738.0
3	1735.6	3	6803.5	6420.8	3818.0	1732.0
4	1736.0	4	6815.9	6428.0	3817.4	1734.0
5	1738.8(38)	5	6839.5	6457.8	3836.9	1735.4
6	1736.4	6	6802.2	6457.9	3838.3	1737.8
7	1736.7	7	6600.7	6241.4	3725.9	1700.1
8	1742.4	8	6545.3	6217.3	3689.7	1703.0
9	1747.8	9	6496.6	6189.4	3664.6	1700.0
10	1748.2	10	6589.4	6243.2	3683.0	1705.6
11	1749.4	11	6629.4	6275.3	3690.6	1710.1(36)
12	1745.4	12	6687.9	6324.2	3732.7	1718.7
13	1733.1	13	6751.6	6376.6	3778.7	1729.0
14	1726.9	14	6775.8	6384.4	3764.9	1728.5
15	1712.1	15	6781.0	6399.0	3788.4	1728.5
16	1706.6	16	6817.6	6433.5	3812.9	1731.5
17	1683.4	17	6829.0	6434.2	3820.7	1732.8(34)
18	1671.8	18	6850.8	6462.6	3838.4	1734.3
19	1671.8(38)	19	6864.8	6482.0	3858.5	1735.8
20	1670.8	20	6901.9	6477.6	3710.1	1743.2
21	1678.2	21	6884.4	6462.3	3878.1	1745.3
22	1684.2	22	6927.4	6479.8	3895.8	1743.7
23	1689.4	23	6932.8	6517.6	3904.5	1739.7
24	1697.3	24	6952.5	6555.9	3906.5	1736.8
25	1712.5	25	6942.2	6579.8	3929.9	1738.9
26	1714.8	26	6960.7	6580.9	3925.3	1737.0
27	1720.8	27	6979.3	6590.5	3923.6	1742.4
28	1724.5	28	6946.6	6540.0	3915.7	1745.5
29	1725.8	29	6921.1	6515.4	3915.8	1748.1(36)
30	1733.0	30	6961.6	6547.8	3922.7	1743.1
		31	6946.0	6553.5	3922.3	1737.8
MEAN	1716.8	MEAN	6818.6	6435.3	3824.6	1731.4

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

OCTOBER 1979

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin no. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

06	1120:	A:	DOB ESK WNG WIT NGK DOU VIC FUR EBR COI TOL FRD QUE BNG HUA MPO CZT KGL DUM
		B:	VAL HAD MMB KAK HAZ
		C:	KNY
19	1155:	B:	BNG
		C:	VAL HAD TOL MPO (si: A: FUR; B: EBR; C: NGK - sfe: WNG WIT)

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01	0555 - 0622	KAK HAZ KNY
06	1719 -	BNG
14	0838 -	BNG
19	0417 - 0457	MMB KAK HAZ KNY (si: C: MPO)
19	1334 -	BNG
20	0554 - 0618	KAK HAZ KNY
20	1151 - 1207	WNG
26	1820 - 1843	HUA

Very unusual events

none

UAG Series of Reports

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UAG-10 "Atlas of Ionograms", price $1.50.

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UAG-21 "Preliminary Compilation of Data for Retrospective World Interval July 26 - August 14, 1972", price 70 cents.
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UAG-23A "U.R.S.I. Handbook of Ionogram Interpretation and Reduction, Second Edition, November 1972", Revision of Chapters 1-4, edited by W. R. Piggott and K. Rawer, NGSDC/EDS/NOAA, July 1978, 135 pages, price $2.14.

UAG-24 "Data on Solar-Geophysical Activity Associated with the Major Ground Level Cosmic Ray Events of 24 January and 1 September 1971", price (includes Parts 1 and 2) $2.00.
UAG-25 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz, 9 September 1968 through 9 December 1971", price 35 cents.

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UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)", [Reissue with quality images] by R. A. Howard, M. J. Koomen, D. J. Michels, R. Tousey, C. R. Detwiler, D. E. Roberts, R. T. Seal and J. D. Whitney, E. O. Hulbert Center for Space Research, NRL, Washington, D. C. 20375 and R. T. and S. F. Hansen, C. J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, Colorado 80303, February 1976, 200 pages, price $4.27.

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